EVALUATION OF INFORMATION CONSOLIDATION PRODUCTS AND SERVICES IN THE LIBRARIES OF HIGHER LEARNING AND RESEARCH INSTITUTIONS: A STUDY OF KARNATAKA STATE

POST DOCTORAL RESEARCH
IN
LIBRARY AND INFORMATION SCIENCE

(Scheme of the Post Doctoral Fellowship for SC/ST Candidates)

A REPORT SUBMITTED TO

UNIVERSITY GRANTS COMMISSION, NEW DELHI

Submitted by
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VIJAYAPURA

2020

DECLARATION

I hereby declare that this report entitled **"EVALUATION OF INFORMATION CONSOLIDATION PRODUCTS AND SERVICES IN THE LIBRARIES OF HIGHER LEARNING AND RESEARCH INSTITUTIONS: A STUDY OF KARNATAKA STATE"** *submitted to* **UNIVERSITY GRANTS COMMISSION, NEW DELHI** *as partial fulfilment of the requirements for successful completion of* **PDF IN LIBRARY AND INFORMATION SCIENCE,** *is the result of the original work carried out by me in the Department of Library and Information Science, under the guidance of* **Prof. P. G. TADASAD,** *Professor of LIS and Registrar (Evaluation), Karnataka State Akkamahadevi Women's University, Vijayapura.*

I further declare that the results of this research work have not been previously submitted for any other degree, diploma or such other similar titles of this university or any other universities in India or abroad.

Place: Vijayapura **Dr. DEEPTHI**
Date: **UGC- PDF**

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This report is a result of the efforts put by me over years and I am quite aware I owe a lot to many without whose support and encouragement I could not have reached this stage of submitting the report.

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Dr. DEEPTHI

Dedicated to my Loving
Mother
Mrs. (Late) KAMLESHDEVI KELKERI

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CERTIFICATE

I certify that the report entitled **"EVALUATION OF INFORMATION CONSOLIDATION PRODUCTS AND SERVICES IN THE LIBRARIES OF HIGHER LEARNING AND RESEARCH INSTITUTIONS: A STUDY OF KARNATAKA STATE"** *submitted by* **Dr. DEEPTHI** *to* **UNIVERSITY GRANTS COMMISSION,** *New Delhi as partial fulfilment of the requirements for successful completion of* **PDF IN LIBRARY AND INFORMATION SCIENCE,** *is the result of the original work carried out by her in the Department of Library and Information Science, under my guidance*

I further declare that this report or any part of it has not been previously submitted for any other degree, diploma or such other similar titles of this university or any other universities in India or abroad.

Place: Vijayapura
Date:

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Mentor

CERTIFICATE

This is to certify that four publications in the form of articles on the research topic have been published in national and international reputed referred journals and conference proceedings.

Dr. DEEPTHI
UGC-PDF

Prof. P.G. TADASAD
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LIST OF TABLES

Table No.	Tables Description	Page No.
3.1	Information Products at different stages	32
5.1	Criteria for Evaluation of Information Services by the academic user community	114
5.2	Criteria for Evaluation of Information Products by the academic user community	114
6.1	Universities: Year of establishment wise	117
6.2	Nature of University	118
6.3	Accreditation of universities	119
6.4	Accreditation status of universities	120
6.5	Validity of accreditation of universities	121
6.6	Nature of university library websites	122
6.7	Library and Information Services provided by the university libraries	123
6.8	Web enabled services provided by the University libraries	125
6.9	Information Products indigenously developed by the university libraries	126
6.10	Provision of social media based LI services	128
6.11	Connection to Different Social Media Platforms and provision of services	129
6.12	Provision of mobile based LI services	134
6.13	Mode of delivery of mobile based LI services	135
6.14	Pricing of LI services and products	135
6.15	Designation-wise distribution of users	135
6.16	Qualification-wise distribution of users	136
6.17	Experience of users in research (In years)	137
6.18	Use of Information services by the academic users	139
6.19	Evaluation of Information Services by the academic user community	141
6.20	Use of Information products by the academic users	146
6.21	Evaluation of Information Products by the academic user community	149

LIST OF GRAPHS

Graphs No.	Graphs Description	Page No.
6.1	Universities: Year of establishment wise	118
6.2	Nature of University	119
6.3	Accreditation of universities	120
6.4	Accreditation status of universities	121
6.5	Validity of accreditation of universities	122
6.6	Nature of university library websites	123
6.7	Library and Information Services provided by the university libraries	124
6.8	Web enabled services provided by the University libraries	125
6.9	Information Products indigenously developed by the university libraries	127
6.10	Provision of social media based LI services	128
6.11	Connection to Different Social Media Platforms and provision of services	129
6.12	Designation-wise distribution of users	136
6.13	Qualification-wise distribution of users	137
6.14	Experience of users in research (In years)	138

LIST OF FIGURES

Fig. No.	Figures Description	Page No.
4.1	Bangalore University: Home Page	62
4.2	Bangalore University: University Library	62
4.3	Bangalore University: Library Collection	62
4.4	Bangalore University: E-Resources	63
4.5	Bangalore University: OPAC	63
4.6	Bangalore University: Link to e-resources	63
4.7	Central University of Karnataka: Home Page	63
4.8	Central University of Karnataka: Library	63
4.9	Central University of Karnataka: E-Resources	63
4.10	Central University of Karnataka: Databases	63
4.11	Central University of Karnataka: Access to Remote Databases	64
4.12	Central University of Karnataka: webOPAC	64
4.13	Central University of Karnataka: Institutional Repositories	64
4.14	Central University of Karnataka: Faculty Profile	64
4.15	Davanagere University: Home Page	64
4.16	Davanagere University: Library	64
4.17	Davanagere University: Access to E-Resources	64
4.18	Gulbarga University: Home Page	65
4.19	Gulbarga University: Library	65
4.20	Gulbarga University: E-Resources	65
4.21	Gulbarga University: OPAC	65
4.22	Gulbarga University: ebrary	65
4.23	Gulbarga University: Online Digital Library	65
4.24	Gulbarga University: Ask-a-Librarian	65
4.25	Gulbarga University: Career information service Catalogue	66
4.26	Gulbarga University: Competitive Examination	66
4.27	Gulbarga University: Access to Vidyamitra	66
4.28	Gulbarga University: Faculty Profile	66
4.29	Gulbarga University: Institutional Repository	66
4.30	Gulbarga University: Question Bank	66
4.31	Gulbarga University: Off Campus Access	66
4.32	Gulbarga University: Virtual Services	66
4.33	Gulbarga University: Subject Gateways	67
4.34	Gulbarga University: Access to useful links	67
4.35	Kannada University: Home Page	67
4.36	Kannada University: Library	67
4.37	Kannada University: Access to useful Links	67

4.38	Karnatak University: Home Page	67
4.39	Karnatak University: Library	67
4.40	Karnatak University: Access to ETD's	68
4.41	Karnatak University: Open Access Resources	68
4.42	Karnatak University: Access to E-Journals	68
4.43	Karnatak University: Access to E-Books	68
4.44	Karnatak University: New Arrivals	68
4.45	Karnatak University: Access to Online Databases	68
4.46	Karnataka Folklore University: Home Page	68
4.47	Karnataka Folklore University: Library	68
4.48	Karnataka State Law University: Home Page	69
4.49	Karnataka State Law University: Library	69
4.50	Karnataka State Dr. Gangubai Hangal Music and Performing Arts: Homepage	69
4.51	Karnataka State Dr. Gangubai Hangal Music and Performing Arts: Library	69
4.52	Karnataka State Dr. Gangubai Hangal Music and Performing Arts: OPAC	69
4.53	Karnataka State Dr. Gangubai Hangal Music and Performing Arts: Off- Campus Access	69
4.54	Karnataka State Open University: Home Page	69
4.55	Karnataka State Akkamahadevi Women's University: Home Page	70
4.56	Karnataka State Akkamahadevi Women's University: Links to E-Books	70
4.57	Karnataka State Akkamahadevi Women's University: : Access to Databases	70
4.58	Karnataka Veterinary, Animal and Fisheries Science University: Home Page	70
4.59	Kuvempu University: Home Page	71
4.60	Kuvempu University: Library	71
4.61	Kuvempu University: OPAC	71
4.62	Kuvempu University: Institutional Repository	71
4.63	Kuvempu University: Knowledge Repository	71
4.64	Kuvempu University: Digital Library	71
4.65	Kuvempu University: E-Resources	71
4.66	Kuvempu University: Access to E-Journals	71
4.67	Kuvempu University: Library Publications	72
4.68	Kuvempu University: Access to E-Databases	72
4.69	Kuvempu University: Access to E-Books	72
4.70	Mangalore University: Home Page	72
4.71	Mangalore University: OPAC	72

4.72	Mangalore University: E-Resources	72
4.73	Mangalore University: Faculty Profile	72
4.74	National Law School of India University: Home Page	73
4.75	National Law School of India University: Library	73
4.76	National Law School of India University: OPAC	73
4.77	National Law School of India University: Remote Access to E-Resources	73
4.78	National Law School of India University: Access to E-Journals	73
4.79	National Law School of India University: Remote Access	73
4.80	Rajiv Gandhi University of Health Sciences: Home Page	73
4.81	Rajiv Gandhi University of Health Sciences: Digital Library	73
4.82	Rajiv Gandhi University of Health Sciences: E-Resources	74
4.83	Rajiv Gandhi University of Health Sciences: Digital Library Services	74
4.84	Rajiv Gandhi University of Health Sciences: Access to Helinet Gateways	74
4.85	Rajiv Gandhi University of Health Sciences: Access to E-Theses	74
4.86	Rajiv Gandhi University of Health Sciences: Access to E-Books	74
4.87	Rajiv Gandhi University of Health Sciences: Open Access Resources	74
4.88	Rajiv Gandhi University of Health Sciences: Question Bank	74
4.89	Rani Channamma University: Home Page	75
4.90	Rani Channamma University: Library	75
4.91	Rani Channamma University: OPAC	75
4.92	Rani Channamma University: E-Resources	75
4.93	Rani Channamma University: Access to E-Books/E-Journals	75
4.94	Rani Channamma University: Link to Digital Libraries	75
4.95	Rani Channamma University: New Arrivals	75
4.96	Tumkur University: Home Page	76
4.97	Tumkur University: Library	76
4.98	Tumkur University: Link to E-Resources	76
4.99	Tumkur University: Link to E-Books	76
4.100	Tumkur University: Link to E-Journals	76
4.101	University of Mysore: Home Page	76
4.102	University of Mysore: Library	76
4.103	University of Mysore: OPAC	77
4.104	University of Mysore: Open Access Resources	77
4.105	University of Mysore: Subject Guides	77
4.106	University of Mysore: E-Prints Repository	77

4.107	University of Mysore: Campus-wide Access	77
4.108	University of Mysore: Access to off campus Resources	77
4.109	University of Mysore: Useful Links	77
4.110	Vijayanagar Shri Krishnadevaraya University: Home Page	78
4.111	Vijayanagar Shri Krishnadevaraya University: Library	78
4.112	Vijayanagar Shri Krishnadevaraya University: Access to Journal Database	78
4.113	Visvesvaraya Technological University: Home Page	78
4.114	Visvesvaraya Technological University: OPAC	78
4.115	Visvesvaraya Technological University: Institutional Repository	78
4.116	Visvesvaraya Technological University: Newsletter	78
4.117	University of Agricultural Sciences, Bengaluru: Home Page	79
4.118	University of Agricultural Sciences, Bengaluru: Library	79
4.119	University of Agricultural Sciences, Bengaluru: Online Resources	79
4.120	University of Agricultural Sciences, Bengaluru: Access to E-Resources	79
4.121	University of Agricultural Sciences, Bengaluru: Campus-wide Access	79
4.122	University of Agricultural Sciences, Dharwad: Home Page	79
4.123	University of Agricultural Sciences, Dharwad: Library Service	79
4.124	University of Agricultural Sciences, Dharwad: Access to Krishikosh	80
4.125	University of Agricultural Sciences, Dharwad: Access to AgriStat	80
4.126	University of Agricultural Sciences, Dharwad: Access to CABI	80
4.127	University of Agricultural Sciences, Dharwad: Link to e-books under CeRA	80
4.128	University of Agricultural Sciences, Dharwad: Link to E-Books	80
4.129	University of Agricultural Sciences, Dharwad: Access to online journals	80
4.130	University of Agricultural Sciences, Dharwad: Institutional Repository of Theses	80
4.131	University of Agricultural Sciences, Raichur: Home Page	81
4.132	University of Agricultural Sciences, Raichur: Library	81
4.133	University of Agricultural and Horticultural Sciences, Shivamogga: Home Page	81
4.134	University of Agricultural and Horticultural Sciences Shivamogga: Library	81
4.135	University of Horticultural Sciences, Bagalkot: Home Page	81

4.136	University of Horticultural Sciences, Bagalkot: OPAC	81
4.137	University of Horticultural Sciences Bagalkot: Sarvagna Library	81
4.138	University of Horticultural Sciences, Bagalokot: Resources	81
4.139	Indian Institute of Science: Home Page	82
4.140	Indian Institute of Science: Library Home Page	82
4.141	Indian Institute of Science: Library Collection	82
4.142	Indian Institute of Science: Services	82
4.143	Indian Institute of Science: OPAC	82
4.144	Indian Institute of Science: Off-campus Access to Resources	82
4.145	Indian Institute of Science: Access to E-Resources	82
4.146	Indian Institute of Science: Access to E-Books	82
4.147	Indian Institute of Science: Access to E-Journals	83
4.148	Indian Institute of Science: Ask us	83
4.149	International Institute of Information Technology: Home Page	83
4.150	International Institute of Information Technology: OPAC	83
4.151	International Institute of Information Technology: Library Collection	83
4.152	International Institute of Information Technology: Digital Library	83
4.153	BLDE University: Home Page	83
4.154	BLDE University: Library Service	83
4.155	BLDE University: Remote Access to Resources	84
4.156	BLDE University: Access to Proquest	84
4.157	PES University: Home Page	84
4.158	PES University: Library Home Page	84
4.159	PES University: OPAC	84
4.160	PES University: Ask-a-Librarian	84
4.161	PES University: E-Books	84
4.162	PES University: E-Resources	84
4.163	PES University: E-Journals	85
4.164	PES University: Library update	85
4.165	PES University: Off-campus access	85
4.166	PES University: Recommended Reading	85
4.167	Christ University: Home Page	85
4.168	Christ University: Library Home Page	85
4.169	Christ University: Library Resources	85
4.170	Christ University: Library Services	85
4.171	Christ University: E-Books	86
4.172	Christ University: OPAC	86
4.173	Christ University: Databases	86
4.174	Christ University: Blog	86

4.175	Christ University: Open Access Resources	86
4.176	Christ University: Question Bank	86
4.177	JSS Academy of Higher Education and Research: Home Page	86
4.178	JSS Academy of Higher Education and Research: OPAC	86
4.179	Jain University: Home Page	87
4.180	Jawaharlal Nehru Centre for Advanced Scientific Research: Home Page	87
4.181	Jawaharlal Nehru Centre for Advanced Scientific Research: Library OPAC	87
4.182	Jawaharlal Nehru Centre for Advanced Scientific Research: Quick Links	87
4.183	Jawaharlal Nehru Centre for Advanced Scientific Research: Services	87
4.184	KLE Academy of Higher Education and Research: Home Page	87
4.185	KLE Academy of Higher Education and Research: Digital Library	87
4.186	KLE Academy of Higher Education and Research: Digital Library	88
4.187	KLE Academy of Higher Education and Research: Library Facility and Services	88
4.188	KLE Academy of Higher Education and Research: Institutional Repositories	88
4.189	KLE Academy of Higher Education and Research: E-Journals	88
4.190	KLE Academy of Higher Education and Research: Remote Access	88
4.191	Manipal Academy of Higher Education: Home Page	88
4.192	Manipal Academy of Higher Education: Major Libraries	89
4.193	Manipal Academy of Higher Education: KMC Library	89
4.194	Manipal Academy of Higher Education: KMC Library E-Resources	89
4.195	Manipal Academy of Higher Education: KMC Library Services	89
4.196	Manipal Academy of Higher Education: KMC Library, Mangalore	89
4.197	Manipal Academy of Higher Education: SOC Library	89
4.198	Manipal Academy of Higher Education: WGSHA Library	89
4.199	Manipal Academy of Higher Education: SOM Library	89
4.200	NITTTE University: Home Page	89
4.201	NITTTE University: Library	89
4.202	Sri Devraj Urs Academy of Higher Education and Research: Home Page	90
4.203	Sri Devraj Urs Academy of Higher Education and Research: Library	90

4.204	Sri Devraj Urs Academy of Higher Education and Research: Digital Library	90
4.205	Sri Devraj Urs Academy of Higher Education and Research: Library Services	90
4.206	Sri Devraj Urs Academy of Higher Education and Research: Library Links	90
4.207	Sri Siddhartha Academy of Higher Education: Home Page	90
4.208	Sri Siddhartha Academy of Higher Education: Library	90
4.209	Swami Vivekananda Yoga Anusandhana Samsthana: Home Page	91
4.210	Yenepoya University: Home Page	91
4.211	Yenepoya University: Library	91
4.212	Yenepoya University: E-Resources	91
4.213	Yenepoya University: Library Services	91
4.214	Alliance University: Home Page	91
4.215	Alliance University: Library	91
4.216	Azim Premji University: Home Page	92
4.217	Azim Premji University: Library OPAC	92
4.218	Azim Premji University: E-Database	92
4.219	Azim Premji University: Open Access Resources	92
4.220	CMR University: Home Page	92
4.221	Dayanand Sagar University: Home Page	92
4.222	Dayanand Sagar University: Library	93
4.223	Dayanand Sagar University: E-Resources	93
4.224	Dayanand Sagar University: E-Jounals	93
4.225	Dayanand Sagar University: Constituent Libraries	93
4.226	Garden City University: Home Page	93
4.227	Garden City University: Library	93
4.228	Garden City University: Online Resources	93
4.229	M S Ramaiah University of Applied Sciences: Home Page	94
4.230	M S Ramaiah University of Applied Sciences: Library	94
4.231	Presidency University: Home Page	94
4.232	Presidency University: Library	94
4.233	Presidency University: E-Resources	94
4.234	Rai Technology University: Home Page	94
4.235	Reva University: Home Page	95
4.236	Reva University: Central Library	95
4.237	KLE Technological University: Home Page	95

LIST OF ABBREVIATIONS

AB	–	Abstract
AICTE	–	All India Council for Technical Education
AILLMIS	–	All India Libraries and Librarians Management Information System
ASTAFS	–	Authority, Scope, Treatment, Arrangement, Format and Special Features
BUBL	–	Bulletin Board for Libraries
CABI	–	Centre for Agriculture and Bioscience International
CAplus	–	Chemical Abstracts Plus
CAS	–	Current Awareness Service
CAS Registry	–	Chemical Abstracts Services Registry
CASSI	–	Chemical Abstracts Service Source Index
CBSE	–	Central Board of Secondary Education
CD-ROM	–	Cassette Disk- Read Only Memory
CEC	–	Consortium for Educational Communication
CeRA	–	Consortium for e-Resources in Agriculture
CMR	–	Chikka Muniyappa Reddy
CRAAP	–	Currency, Relevancy, Authority, Accuracy and Purpose
CSIR	–	Council of Scientific and Industrial Research
DVD	–	Digital Versatile Disk
e-Books	–	Electronic Books
Ei	–	Engineering Index
e-Journals	–	Electronic Journals
e-Learning	–	Electronic Learning
e-Resources	–	Electronic Resources
ETD	–	Electronic Thesis and Dissertation
e-Thesis	–	Electronic Thesis
FAQ	–	Frequently Asked Question
HTML	–	Hyper Text Machine Language
IAC	–	Information Analysis and Consolidation
IACBE	–	International Accreditation Council for Business Education
IASLIC	–	Indian Association of Special Libraries and Information Centres
IBS	–	ICFAI Business School
ICAR	–	Indian Council of Agricultural Research
ICP	–	Information Consolidation Products
IISc	–	Indian Institute of Science
IIT	–	Indian Institute of Technology
ILA	–	Indian Library Association
INDEST	–	Indian National Digital Library in Engineering Science and Technology
INFLIBNET	–	Information and Library Network Centre
IPL	–	Internet Public Library
IPR	–	Intellectual Property Rights
IR	–	Institutional Repositories
ISIB	–	Indian Statistical Institute Bangalore
JSTOR	–	Journal Storage

KLE	–	Karnataka Lingayat Educational Society
KMC	–	Kasturba Medical College
KW	–	Key Word
LI	–	Library and Information
LIS	–	Library and Information Science
LISA	–	Library and Information Science Abstracts
LISTA	–	Library Information Science and Technology Abstracts
MAHE	–	Manipal Academy of Higher Education
MRP	–	Major Research Project
NAAC	–	National Assessment and Accreditation Council
NCERT	–	National Council of Educational Research and Training
NCSU	–	North Carolina State University
NCTE	–	National Council for Teacher Education
NDLTD	–	Networked Digital Library of Theses and Dissertation
NIC	–	National Informatics Centre
NISCAIR	–	National Institute of Science Communication and Information Resources
NISS	–	National Information Services and Systems
NMIC	–	National Museum of Indian Cinema
NPD	–	New Product Development
NPTEL	–	National Programme on Technology Enhanced Learning
NSTMIS	–	National Science and Technology Management Information System
OPAC	–	Online Public Access Catalogue
OSCAR	–	Open Source Courseware Animations Repository
P G	–	Post Graduate
PDF	–	Post Doctoral Fellow
PhD	–	Doctor of Philosophy
R&D	–	Research and Development
RSS	–	Really Simple Syndication
SDI	–	Selective Dissemination of Information
SMS	–	Short Message Service
SOC	–	Manipal Institute of Communications (Formerly School of Communication)
SOM	–	Manipal Institute of Management Studies (Formerly School of Management)
SOP	–	Standard Operating Procedures
STN	–	Scientific and Technical Information Network
STN	–	Scientific and Technical Information Network
TI	–	Title
TV	–	Television
UGC	–	University Grants Commission
webOPAC	–	Web Online Public Access Catalogue
WGSHA	–	Welcome Group Graduate School of Hotel Administration
www	–	World Wide Web

CONTENTS

Chapters No	Particulars	Page No
	❖ UGC-PDF award letter ❖ Declaration ❖ Certificates ❖ Acknowledgement ❖ Dedication ❖ Contents ❖ List of Tables ❖ List of Figures ❖ List of Abbreviations	
1	**INTRODUCTION**	**01**
	1.1 Introduction 1.2 Need for the study 1.3 Statement of the problem 1.4 Objectives 1.5 Methodology 1.6 Study population 1.7 Sampling method 1.8 Characteristics of study population 1.9 Operational definitions 1.10 Chapterization	
2	**EVALUATION OF INFORMATION PRODUCTS AND SERVICES: REVIEW OF LITERATURE**	**12**
	2.1 Introduction 2.2 Methodology 2.3 Review 2.4 Inferences	
3	**INFORMATION PRODUCTS AND SERVICES – CONCEPTUALIZATION**	**28**
	3.1 Introduction 3.2 Conceptualization 3.3 Information products at different stages 3.4 Information products 3.5 Information services 3.6 Conclusions	
4	**INFORMATION PRODUCTS AND SERVICES AS REFLECTED IN THE UNIVERSITY WEBSITES**	**62**
	4.1 Introduction 4.2 University Websites 4.3 Conclusions	

5 EVALUATION OF INFORMATION PRODUCTS AND SERVICES 96

5.1 Introduction
5.2 Evaluation of Information Products and services
5.3 Criteria
5.4 Institutions' present practices
5.5 Inferences
5.6 Model adopted
5.7 Conclusions

6 DATA ANALYSIS AND INTERPRETATION 117

6.1 Introduction
6.2 University Websites
6.3 User Evaluation
6.4 Conclusions

7 SUMMARY OF FINDINGS AND CONCLUSIONS 157

7.1 Introduction
7.2 Summary of Findings
7.3 User Evaluation
7.4 Suggestions
7.5 Areas of Further Research
7.6 Conclusions

BIBLIOGRAPHY 169

APPENDICES

Appendix-I: Worksheet Used to Elicit Data from University Websites
Appendix-II: Questionnaire Used for the Surveying the Users
Appendix-III: Five Research Papers Published

CHAPTER-1
INTRODUCTION

1.1 Introduction:

As we are living in the knowledge society, the institutions of higher learning particularly Universities have to play a vital role in the generation of innovative knowledge and conduct societal research. Universities are expected to prepare industry ready graduates to undertake various assignments including research and development. Hence there is a dire necessity to support them with required information. Information is made available in different channels, different forms, and different modes. This has led to exponential growth of information. This factor has necessitated consolidation and repackaging of the information tailor made to the requirements of the user community. Saracevic (1986) defines information product as the end result of the process of evaluation and compression of relevant documents in order to provide definite user groups with reliable and concise information in usable form.

The different information consolidation products include state-of-the-art reports, critical reviews, handbooks, manuals, guidebooks, new announcements, newsletters, operational or maintenance manuals, handbooks, summaries of advances in a topic, statistical condensations, cross tabulations, correlations, etc. These information consolidation products and services are very important in keeping the research developments up to date. And such products and services are very essential in all types of libraries. Libraries of higher learning and research institutions are no exception to this. The library and information centers are required to develop these products to satisfy the needs of P G Students, research scholars and teaching fraternity. An attempt is made in this study to evaluate the information products from users' point of view based on the criteria developed for the purpose.

1.2 Need for the study:

Providing consolidated information in the form of a product is a task which requires skills, techniques, efforts and resources of an institution. Evaluations of such information products are also equally important to maintain their relevancy and usefulness in improving the features of such products. Evaluation studies help to design new criteria for improving the information consolidation products and services which could be provided in the libraries of higher learning and research institutions. Such studies help in customization of information consolidation products and services with the help of standard checklist and developing new criteria for their evaluation.

The information consolidation products should be evaluated regularly for its efficiency, effectiveness and productivity. This process of evaluation should cover all operations, services and products. The users of any information services including information consolidation service evaluate them consciously or unconsciously against cost, time and quality. Hence it should be done on a continual basis. In other words, evaluation of an information consolidation unit should not be considered as merely a one-time activity since the performance should be monitored continuously.

A search on Library and Information Science Abstracts database (LISA) (2011), www.emeraldinsight.com, Library, Information Science and Technology Abstracts (LISTA), and Subject Bibliographies reveal many facts. It is noticed that a huge amount of literature is published on information products. But it refers mainly to the design and development of information products and marketing of information products of commercial publishers and vendors. There are many reports on the availability of specifically designed

products of very large commercial houses. This report restricts the terminology ‘information products’ to the products which are indigenously developed by the universities under study as consolidated and repackaged by the university itself.

Wormell (1999), Llanes, Cartaya and Andrade (1999), Mead and Richards (1995), reported the application of the technique of meta analysis. Power (1996) presented a state of art review of the information consolidation process and described its application to the planning and evaluation of an electronic information service for a group of managers working in the computer industry. Lanciger (1990) discussed the advantages and disadvantages of both information consolidation and management by explaining the management of enterprises, the type of processing of information is required whose final product could be used directly by management staff; this necessitated more advanced forms of work followed by consolidation of information. Seetarama (1985) outlined the need for textual and non-textual presentation in ICPs and discussed the criteria to be followed and prerequisites for adoption of these presentations. Struges and Chimseu (1996) discussed the importance of repackaged information in a usable form to the community by recommending an alliance between libraries, repackaging and distribution units.

For Seetharama (1985) a quality information product should contain a good mix of text, tables and illustrations for effective presentation. Curr (2001) suggested repackaging of digital collections in response to user demand for information to be delivered across a wide area. A user-focused approach was adopted (task based usability testing) to evaluate the live reference service at the Health Sciences library at the University of Saskatchewan (Duncan and Fitcher, 2005). Virtual reference and instruction services were evaluated with

regard to whether these services met the current needs of users (Walters and Williams, 2003). The University of Memphis Libraries in 2006 consolidated three reference services desks into one to provide quality service to satisfy user needs (Nall; Rustomfram and Freilich, 2008). Wleklinski (2015) recommended evaluations of information products based on pricing, content coverage, end user satisfaction and search functionality.

Academic library websites in North America were evaluated on the basis of accessibility and certain design methods and technologies (Comeaux and Schmetzke, 2013). Popoola's (2008) study found that there was a significant difference in faculty awareness among 446 faculties in Nigerian universities of available library information products and services. Hepworth (2006) concluded that a deeper understanding about current knowledge needs to be developed as current application of knowledge about the information consumer is rudimentary and highlighted the need to apply and test current knowledge.

Web-scale discovery tools of the Knight-Capron Library at Lynchburg College were evaluated by conducting usability studies (Ours, 2012). Existing discovery services in the field historical periodicals archives, newspaper archives, press databases were classified and analyzed, then a set of indicators was designed in order to evaluate them and finally, this set of indicators was tested on real archives e.g. the most popular Spanish and Catalan newspapers, etc. The resources available through web-scale tools were carefully evaluated by the Mayo Clinic Libraries in the context of user needs (Bringham, et.al. 2016).

Review of literature depicts the fact that information products have not been evaluated from users' point of view in a university environment in the Indian context in digital age. Hence the present study has been undertaken.

1.3 Statement of the problem

"Evaluation of Information Consolidation Products and Services in the Libraries of Higher Learning and Research Institutions: A Study of Karnataka State".

1.4 Objectives:

The major objectives of the studies would be:

1. To know the present status of libraries of higher learning and research institutions in providing information consolidation products and services in Karnataka State.
2. To evaluate the information products and services from users point of view
3. To establish criteria for evaluating the information consolidation products and services.

1.5 Methodology:

Appropriate research methodologies were used for evaluation of information consolidation products and services in the libraries of higher learning and research institutions. Present status of libraries of higher learning and research institutions in providing information consolidation products and services in Karnataka State was done through content analysis of institutional websites. Products were evaluated by surveying the users using the structured questionnaire. Criteria for evaluation of information of information products were fixed based on published literature. The University Websites, questionnaires and published literature were the basic data collection tools used in the study. The websites of the universities are identified and analyzed for the availability of information products and services being extended to the users. A structured questionnaire has been devised based on the objectives of the study. Information products and services are evaluated on a five point Lickert scale on eight established criteria.

1.6 Study Population:

The study population is limited to the higher learning and research institutions of Karnataka State. The Universities which are recognized by UGC under 2f, 2b or section 3 are considered as the study population. This involves 54 universities of Karnataka, which includes 1 Central University, 26 State Universities, 15 Deemed Universities and 12 Private Universities. Of the 54 universities websites of three institutions of higher learning were not functional. Hence only 51 universities which had functional websites were considered for the study. The websites of these 51 Universities were identified and analyzed for the different information consolidation products and services. Further, research scholars who have completed a minimum of two years in research work and teachers who are involved in research in these universities were also considered for evaluating the products and services.

1.7 Sampling method

Census method is used as far as Universities are concerned. There are 54 universities recognized under UGC in Karnataka State. Among them only 51 universities had active web-sites. Hence all the 51 universities are analyzed for the present study. As far as users are concerned randomly selected 15 researchers and 10 teachers were surveyed.

1.8 Characteristics of Study population

The study population is geographically restricted to Karnataka State. The universities which are recognized by UGC in Karnataka state is the scope of the present study. The Libraries of higher learning and research institutions of Karnataka, is the scope of the present study. This involves the 54 universities of Karnataka, which includes 1 Central University, 26 State Universities, 15

Deemed Universities and 12 Private Universities. The scope of the study is limited to active websites of the university libraries and evaluating information consolidation products and services of these libraries.

1.9 Operational Definitions:

1.9.1. Information Consolidation:

Information consolidation is a process used to identify and provide a better understanding of the concepts, processes and options involved in evaluating and compressing relevant document to provide specific user groups with reliable and concise bodies of knowledge (Power, 1996). It is, "a process of evaluation and compression of relevant documents in order to provide definite user groups with reliable and concise information in usable form" (Saracevic, 1985).

1.9.2. Information Products:

An item that has been derived from one or more sources of information to meet a specific purpose. An Information Product is an article (often digital) where data and information are structured in a specific format to instruct, educate or guide the consumer in order to meet a predefined purpose (Robinson, 2017). Here, information products are the information products created or generated by the different University libraries for the use of its users. The different kinds of information products are e-books, e-zines and newsletters, reports and research data, tutorials, courses and help files.

1.9.3. Information Services:

Information services are the services provided by the library to the user community.

1.9.4. Higher Learning and Research Institutions:

As defined by UGC the University is a high-level educational institution in which students study for degrees and academic research. Here, the Universities which are recognized by UGC under 2f, 2b or section 3 are been studied.

1.10 Chapterization:

The research study is organized into seven chapters

Chapter-1: Introduction: In this chapter an attempt has been be made to justify the need for the study. It provides statement of the problem, enumerates the objectives of the study, hypothesis, the research methodology adopted the data collection tool. This chapter also defines the study population, sampling method and the characteristics of study population which includes the scope and limitations of the study. It also gives operational definitions and provides chapterization.

Chapter-2: Review of Literature: Evaluation of Information Products and Services. Based on the available literature on Information Products and Services a review is done chronologically in four different sections.

Chapter-3: Information products and services: Conceptualization: Different information products and services considered under the study have been briefly introduced in this chapter.

Chapter-4: Information Products and Services as reflected in the University Websites: An attempt is made in this chapter to support Chapter-3 and Chapter-6, the screenshots of the university websites and the products and services as reflected in the websites are provided.

Chapter-5: Criteria for Evaluation of Information Products and Services: An attempt is made in this chapter to arrive at model criteria for evaluation of information products and services based on the published literature.

Chapter-6: Data Analysis and Interpretation: Based on the content analysis of university websites and data collected through questionnaire from the users analysis of data is made and interpretations are drawn.

Chapter-7: Summary of Findings, Suggestions, Future Areas of Research and Conclusions: Provides summary of findings, conclusions gives suggestions and identifies future areas of research.

A bibliography arranged alphabetically by authors name is provided at the end in APA style and it is followed by:

Appendix-I: Worksheet used to elicit data from university websites

Appendix-II: Questionnaire used for the surveying the Users

Appendix-III: Five Research papers published.

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CHAPTER-2
EVALUATION OF INFORMATION PRODUCTS AND SERVICES: REVIEW OF LITERATURE

2.1 Introduction:

Information products of digital era have traversed a long way from the days of clay tablets to manuscripts to incunabula to print media, to the non-print media to the e-media. As a source of information since then they were always subjected to evaluation. May be the process of evaluation has changed but the criteria for evaluation and perspective of evaluation have improved over the years. This has led to the growth of literature on the topic. An attempt is made in this chapter to review the related literature on the topic.

2.2 Methodology:

Literature was searched using key words "Information Products", "Information Services", "Information Products and services" in combination with 'Evaluation". When a broad search was made huge amount of literature was retrieved but its relevancy was too low forcing to modify the search using parameter limitations like TI, KW, AB, etc. The search was made in JSTOR, J-GATE, EMERALD, Google Scholar, Shodhaganga, web of science, LISTA and Indian Citation index. Forty years literature from 1978 to 2018 was searched. The full text articles were downloaded as per license agreements of the databases. In case of full texts which were not available, efforts were made to get them either by sending request or through document delivery service. For non-English articles the English abstracts have been used for reviewing the literature. Only prominent among them have been reviewed in this chapter.

2.3 Review:

The related literature has been reviewed chronologically in ascending order. It has been presented under four sections - 1980s, 1990s, 2000s, 2010s.

2.3.1. 1980s

Swanson (1975) viewed evaluation studies as essential to the management of information centres from the points of view of nature of the product, its validity, reproducibility, reliability and industrial value. Pinelli, Hinnebush and Taffe (1981) reviewed and evaluated the Langley Research Center's scientific and technical information program based on the review of the literature. King (1983) considered cost, performance, effectiveness and benefits as criteria for evaluation of information products.

Box (1983) emphasized that any product needs to be evaluated by its product quality as assessed by the consumers. He identified quality as the degree to which a product fulfils its function, given the needs of the consumer. He identified two sub-qualities: functional and psychological qualities. Functional qualities (objective characteristics) consist of properties of the material, workmanship and of the technical and economic nature. The psychological qualities (subjective characteristics) include aesthetic beauty, sportsmanship, prestige, etc.

Saracevic (1986) claimed that the very definition of information consolidation – "the process of evaluation and compression of relevant documents in order to provide definite user groups with reliable and concise information in usable form" includes the criteria to be adopted for evaluation of information products.

Repo (1986) felt that the value of information in an information product should be viewed from its use viewpoint. He argued for considering practical value in terms of use value (or value in use) and exchange value as most important criteria to evaluate the information products as it is impossible to measure the total value of information.

Repo (1986 & 1987) by reviewing 20 years literature noted that cost of information products and services, price of information, effectiveness and efficiency of services cost-benefit analysis and economics of online searching are the factors to be considered for evaluation of information products and services.

Considering the economic characteristic features of the information market Sugar (1988) argued for economic evaluation of information between services directed to traditional activities and those for the emerging information market.

Bar (1988) argued for Multi-file Multidisciplinary (horizontal) search approach to search online databases which will make end user to avoid vertical search approach which emphasizes on file specialization and searching in a restricted way. Denis and Poulet (1989) highlighted on two most important characteristics of an information product which the users expect. Users expect the information that they receive should be reliable and accurate. They observed that in case of unreliability or inaccuracy, they will blame the person who provided them with the information.

Hong and Wyer (1989) raised four hypotheses concerning the cognitive processes underlying the effects country of origin and specific attribute information on product evaluation. The country of origin not only had a direct influence on product evaluations but also appeared to stimulate subjects to think more extensively about other product attribute information augmenting latter's effect.

2.3.2. 1990s

Perrit (1991) proposed to consider the discrete characteristics or attributes of information products or types of values as criteria for the evaluation of information products in the light of their availability in technology based platforms which enable a disaggregation and an associated disintegration of production.

Orna (1992) put forth his argument to consider the criteria used for product designing in its evaluation also as it is important to view how conceptually the product was designed. Tiyamiu (1993) observed that information products could be analysed in terms of their linguistic, artistic, technological, pragmatic and contextual components and characteristics and concluded that the same criteria may be applied to produce marketable value-added products.

Haynes and Lomas (1995) stressed for evidence based information products. They called for paying attention to quality evidence, performance effectiveness and relevancy embodied in information innovations.

Silverstein (1995) based a study of eleven hospital libraries in New York State observed that information products need to be evaluated on the basis of user defined parameters particularly usefulness and the impact it creates among users.

Meyer and Zack (1996) felt that information products need to be evaluated for its sustained competitive success from the viewpoint of its architecture as different architectures result in different product functionality, cost, quality and performance.

Power (1996) discussed various aspects of the information consolidation process and felt that the criteria used for consolidation process itself could be

better evaluation criteria particularly information in a concise format, adhering to the indicated quality and effectiveness are the major points to be considered for evaluation of information products.

Oliver, Wilkinson and Bennett (1997) listed the criterion categories to be used for valuation of internet based resources which include site access and usability, resource identification and documentation, author identification, authority of author, information structure and design, relevance and scope of content, validity of content, accuracy and balance of content, navigation within document, quality of links and aesthetic and affective aspects.

A similar kind of observation was also made by Frieden, Goldsmith, Tackacks, and Hofacker (1998) who recommended to see information as product and urged the professionals neither to view it as goods nor service. Hence they have proposed to consider the very unique characteristics of information as criteria for evaluation of information products.

Gordon – Murnane (1999) examined the evaluation policies of 12 web evaluation services and noted that unlike the evaluation of print or other information products, the evaluation criteria for web products. The evaluation criteria for web products have been greatly influenced by whether or not they are popular based on reliability and trustworthy to provide careful and thoughtful resources.

2.3.3. 2000s:

Singh (2003) also claimed that each source of information product has to be evaluated with due care to ensure the authority, accuracy, quality, reliability, and objectivity of the information one uses.

Crespo (2003) considered effective utilization and the way the information products are elaborated as the points to be considered for the evaluation of information products.

Bansal, McDougall, Dikolli and Sedatole (2004) tried to relate e-satisfaction to behavioural outcomes in an online setting. They have observed that existing models that examine the antecedents and consequences of satisfaction in the offline setting also apply to an online setting. They also found that website characteristics also have an impact on all types of behaviour outcomes.

Kendadmath (2004) suggested evaluating the effectiveness of the products and services. The effectiveness must be evaluated in relation to organizational objectives, internal strengths and weaknesses and customers' satisfaction and demand.

Li, Sayed and Robertson (2005) evaluated contemporary drug databases based on the relative strengths and weaknesses against a list of specific criteria.

Dunk (2005) after a thorough investigation found that the efficacy of factors like quality of information system information, corporate environmental integration, product innovation, and product quality may be more effectively assessed by evaluating their impact on performance measures in non-financial terms which will lead to enhance the functioning of the system.

Childs (2005) reviewed the literature on quality assessment and quality control on health information on the Internet and found that a range of quality initiatives exists, but found neither an internationally agreed set of criteria nor a quality assessment tool.

Katasonov, Veijalainen and Sakkinen (2006) developed and evaluated an approach to assess the content quality based on an assumption that the measures of the effect that the imperfections of the content is having on the reliability of that specific service. It did not asses the quality in absolute terms such as completeness or accuracy.

Appleton, Bullen, Walden and Eldridge (2006) noted that it's the searching experience and the relevancy that matter most in the evaluation of an information product.

Hepworth (2007) by highlighting social phenomena that are dividing the design of user-centric information solutions stressed to develop a broad ontology information behaviour research. This behaviour serves to identify factors that should be taken into account when designing such products and this knowledge could be used in the design of inclusive information products and services.

Cozin and Turrini (2008) evaluated the quality of the services provided by the library at the Nursing School of the University of Sao Paulo covering five components tangibles, reliability, responsiveness, assurance and empathy.

Joint (2008) tried to illustrate the impact of federated search on the design of information product as evidence of the broader research principles underlying the success or failure of digital information products.

2.3.4. 2010s:

Chowdhury and Chowdhury (2011) suggested using a variety of usability methods and techniques to assess the effectiveness, efficiency and sustainability of a variety of web-based information products and services.

Kalra, Li, and Zhang (2011) emphasized responding to contradictory information about products where the implications on whether to persist with or abandon the product are not readily apparent. Hence they stressed on the need to update product quality beliefs.

Murphy (2011) advocated the adoption of Info Pro – a tool for consumer – staff interaction to suit the interaction between consumer and product file so that the efficiency of the product could be enhanced.

Hjorland (2012) discussed 12 different approaches to the evaluation of information sources which can also be applied to information products. These include checklist approach, classical per review, modified peer review, evaluation based on examining the coverage of controversial views, evidence based evaluation, comparative studies, author credentials, publisher reputation, journal impact factor, sponsoring agency, book review and book reviewing and broader criteria.

Zhitomirsky – Geffet and Maman (2013) tried to determine the quality and reliability of information products by assessing through the lens of wisdom of the crowd and found that the reliability fluctuates with the trend.

Wusteman (2013) described a realistic experience of how information architects apply their skills to produce usable products. The same principles could be used to evaluate the products.

Idiegbeyan-Ose and Adewole-Odeshi (2014) used authority, cost, relevancy, coverage, currency etc as criteria for evaluation of e- information products.

Results of Lee and Young's (2015) study suggested that helpfulness rating and the degree of referencing are positively associated with NPD's

information adoption while the extremeness of product rating is negatively associated.

Colepicole (2015) tried to find some subsidies related to information reliability that may be used during information search and retrieval. The author called for reliability of information that target the practical and effective learning based on the experiences of searching and discovering.

Several aspects have been identified by Hostingfacts Team (2016). Prominent among them were: Authorship, publication issues, currency and relevancy, accuracy, purpose and objectivity, type of references and links, its overall utility

Su's (2016) study drawing on insights from the appraisal framework the parameter based approach to evaluation and corpus linguistics, investigated the evaluative language used in customer review texts. It proposed a data-driven, parameter-based and appraisal-informed framework of evaluation which comprises four parameters – quality, satisfactoriness, recommend ability and worthiness.

Shilpi Kumari (2017) considered the issue of authenticity as the most prime among different parameters to be considered for evaluation of information products. The others being user friendly interface, authority, currency and purpose, coherence among related products, multi-disciplinarily of the content

Keh and Sun (2018) investigated the effects of online peer review and expert review on consumers' evaluation of experience and credence. Across the three studies it is found that the interaction effects between information source and service type on service evaluation are mediated by consumer confidence. They identified the moderating role of information convergence on these effects.

Ball and Bothma (2018) tried to identify criteria according to which e-dictionaries can be evaluated and it was found that e-dictionaries could be evaluated according to their content, information architecture, navigation, access (searching and browsing), help, customization, and use of other innovative technologies.

2.4. Inferences:

It is evident from the review of literature that the concept "evaluation of information products" has received less importance compared to "marketing of information products". It is a well known fact that evaluation of any system is of utmost significance for its improvement.

During 1980s, evaluation studies were considered as essential to the management of information centres. A number of information centres' have reviewed and evaluated their resources. A number of parameters which were appropriate during that time were identified as criteria to evaluate the information sources. During this decade only the concept of information product as end results of information analysis and consolidation gained its momentum and designing of information product to cater to the market needs emerged. Search efforts in online databases as criteria of evaluation emerged during this period. Satisfaction of users' expectations also became a topic of discussion.

By 1990's there was a shift in the research concern. Attributes of information products and their utility in the evaluation process have received attention from the research community. As in the late 80s product designing got much significance and research started evaluating the products based on the characteristics used for designing information product. Information products

have also been considered from linguistic viewpoints, quality evidence, performance effectiveness, relevancy, usefulness and sustainability.

In the initial years of 21st century, the same arguments proposed during 1980s and 1990s continued but behavioural changes; relative strengths and weaknesses were considered as other criteria for evaluation. This is the phase where information products were compared with that of corporate information products. Federated search, networked availability, quality digital content became other parameters for evaluation.

By 2010's the face of information products has completely changed in the light of web enabled products and digital products. Variety of use studies, usability studies, studies from multiple angles was suggested to evaluate the products. More research was done on designing the products and tools as interface devices. There were also arguments on using the same parameters which were used for evaluating information sources. Viewing through lens of wisdom became a catchy approach in the evaluation of the products. Realistic approaches became more popular in the evaluation of products.

But the forty year literature has failed to find neither an internationally agreed set of criteria nor quality as assessment tool. Further no study was reported from the universities, colleges, academic institutions or those engaged in R & D which has tried to evaluate the information products indigenously developed by then concerned institutions.

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CHAPTER-3
INFORMATION PRODUCTS AND SERVICES - CONCEPTUALIZATION

3.1 Introduction:

We are living in the knowledge society and it is a known fact that information society pre-supposes knowledge society. Hence information is a pre-requisite in a knowledge society. Information and knowledge are considered as the most vital assets for any knowledge based industry. By making use of this information, the business/industrial houses and manufacturers, academic and research institutions and laboratories create variety of information products to promote their own activities, products, processes, services, etc. Information product is any portion of information/knowledge that has been recorded in some systematic way-whether in print format or audio or video format or electronic or digital format so that it can be transmitted to others for use. An attempt is made in this chapter to provide an overview of the concept.

3.2 Conceptualization:

Saracevic and Wood (1981) have defined the concept of information product as information consolidation products to mean that these are the products emanating from Information Consolidation Units and involve the performance of various activities like selecting, acquiring, evaluating, analysing, synthesizing, restructuring, packaging, repackaging etc. Later Saracevic (1986) improved the definition of information consolidation product as an output of the process, evaluation and compression of relevant documents in order to provide definite user groups with reliable and concise information in

usable form. Thus it is a product of a team work consisting of subject experts, user community and the LIS professionals.

Since then many definitions have been coined owing to the changes in the market necessitated by digital environment. In general information product is an item that has been derived from one or more sources of information to meet a specific purpose. Robinson (2018) defines information product as an article (often digital) where data and information are structured in a specific format to instruct, educate, or guide the consumer in order to meet a specific purpose. According to iBiz Academy.com (2015) most common information products are printed books and electronic books, booklets and special reports, manuals and workbooks, audio cassettes, CDs, or downloadable audio films, videotapes, DVDs, telecasts, subscription-based websites and so on.

An information product can be considered as anything that contains information in a structured format offered to a market to satisfy an information need or want of a customer. If an information product delivers information or knowledge at a value then it qualifies as an information product. Information products can also be delivered over the Internet and essentially provide information about a topic of sufficient interest to users to pay for the information contained therein.

In order to create an information product, the product developer needs to know the aspects like demand of the product, quality, presentation and follow-ups that can be offered in their right context. Once the user demand is determined, the developer may venture into preparing an information product. Accordingly information products may be defined as those that are prepared after selecting and acquiring suitable information sources. Thus the design and

development of the information products involve such activities like selecting, acquiring, evaluating, analyzing, synthesizing, restructuring, packaging, and repackaging, etc.

In a nutshell an information product is a tangible item containing information that is put on the market for acquisition, attention or consumption while an information service is an intangible item which arises from the output of one or more individuals. But one thing is clear that information products and services are closely aligned. Either products are prepared to provide a service or a product will be emanated as a by-product of a service.

The following essential points need to be considered in the preparation of information products.

1. A good information product is the result of joint and contributed effort of different groups subject specialists
2. Users of the information products may not be the end users of the information contained in the product. They may be intermediaries whose role is to cull out from the product the specific information and present it to the beneficiaries in a convenient form
3. Information products may be a by-product or spin off from the work done for producing other information products or services.

Thus it can be inferred that information products and services should be highly user oriented. As such its preparation would be related to the information needs in different stages of the diffusion process. There are five stages of diffusion of information – awareness, interest/knowledge, attitude formation, trial/decision, adoption/ confirmation. With the information requirements become too specific from awareness to adoption/ confirmation, information

products tend to become more specific and highly selective/personal. Based on different types information diffusion Saracevic and Wood (1981) have identified different information products as indicated below.

3.3 Information Products at different stages:

But since then there is a paradigmatic shift in the very functioning of institutions of higher learning, their library and information centers are expected to develop various information products and services to suit all environments suggested by Saracevic and Woods way back in 1981 to accomplish the needs of user community at different diffusion levels. Expectations of accrediting agencies, global competency, responding to the societal need, necessity to establish linkages with industries, laboratories, other academic and research intuitions, coordinating with local, state and central Governments on different issues, interacting with professional associations, and organizations at national and international level, needs of knowledge society combined with digital technology have literally changed the original concept of information consolidation products into a digitally available information products.

There are different types of information products and services. A brief overview of each one of them which was considered for study is provided.

Table-3.1
Information Products at different stages

Type of Organisation	Awareness	Interest/ Knowledge	Attitude Formation	Trial/ Decision	Adoption/ Confirmation
Small Industry	Advertising Announcing reports on a particular product/ process Promotional brochure, Newsletter Data	Reports, Group seminars, Visits, Briefing, Exhibits, Synthesis of requirements	Seminars on effects, Comparative statistics, Reports on alternatives and experiences, Videotapes, films	Demonstration, Technical Manuals, Graphic displays, Data books, Handbook	Operational manuals, Market Reports, Handbook
Medium Industry	Brochure describing product/process of interest to technical personnel. Market description	State-of-the-Art review describing the technology. Resource or economic analysis or summary.	Comparative experiences. Critiques, Market analysis reports	Demonstration, Technical Assistance Manuals, films, tapes, picture. Data books	Operational manuals, Updates, Trends, Synthesis of advances, Handbook
Large Industry	Alerting bulletin, Newsletter Technical news Market Trends	Individual seminars on new developments Economic analysis, Synthesis of research results, Critical data. Reply to inquiry	Competitive Analysis Impact analysis, Historical reviews of similar efforts. Evaluations	Demonstration, Testing Reports Technical manuals Tables of recommended data	Operational manuals for different levels of personnel. SDI synthesis of advances. Continuous critical and recommended data
Local Government	Promotional brochure. Press release Newsletter announcing reports on topics of local interest	Workshop for officials Reviews Statistical synthesis Visits Analysis/ Synthesis of practices	Impact analysis. Comparative data Demonstration Briefing	Manuals for implementation Comparative Experiences Referral Documentation	Recurring supply of synthesised information Establishment of question-answering procedure
State Government	Announcements from letters Presentation at meetings Newsletters. Alerting bulletin	Slide/tape descriptions. Briefing Reviews Statistical composites. Synthesis of research findings Data tables.	Historical data. Comparison with other countries Demonstration Impact analysis, Evaluations Integrative future studies	Synthesis of practices and trials Manuals Referral. Documentation	Recurring supply of synthesized information Evaluation reports.
Mass Urban Population	Newspaper articles. Announcements on Radio, TV, Popular talks on a given practice or product. Question-answer sheets	Radio, TV, shows Popularization articles. Simplified pamphlets, brochures. Comic strips. Photo novels. Demonstration Exhibits. Popularized journals. Field manuals.	Comparing with other practices. Demonstrations Synthesis of fitting with daily life. Possible impacts, positive and negative	Show-how information Simplified manuals. Do-it-yourself booklet.	Synthesized information fortifying and refining the practice.
Mass Village Population	Radio announcement. Visits with opinion leaders. Posters, graphic displays. School talks Training sessions for extension workers	Extension service demonstrations Simplified pamphlets. Field manuals in various media (eg. Picture books, comic strips) Graphic displays, Films. Talks	Talks by opinion leaders. Comparison with other villages Synthesis of fitting with village life. Impact. Summary	Show-how information Field manuals. Experimental information Markets for cash crops. Do-it-yourself booklets	Reinforcement information. Comparisons. Refinements Increased know-how information Market enlargement information
News Media	Press release. Invitation to demonstration Press clippings from foreign or technical press. Alerting bulletin.	Demonstration Popularized articles. Synthesis of findings and results elsewhere. Timetables. Plans	Graphic material. Comparative data. Briefings and news conferences	Short guides. Interviews with experts, leaders	Reports on applications. Articles on refinements. Results analysis. Impact analysis.
Academic/ Research Institutions	Journal notices. Short Announcements in professional newsletters. Acquisition notices	State-of-the-art and critical reviews. Synthesized research results Referral Journal Articles. Text excerpts. Critical Data. Data Surveys.	Synthesis of critical reports and evaluations Comparative results Resource requirements information.	Research data Training/educated materials. Know-why information Experiences at other institutions	Continuing synthesised SDI reports Selective current contents; Refinements in advances Critical data

3.4 Information Products:

3.4.1 Question bank:

Question bank is a library containing hundreds of questions one can add to a database. A question bank is a planned library of test items designed to fulfil certain predetermined purposed. It is one of the most relevant and important information products that satisfy the need of student community. Question banks are prepared with utmost care so as to cover the entire prescribed text. Question bank is usually exhaustive and covers entire content with different types. A question bank makes available statistically sound questions of known technical worth and model question paper and thus facilitates selection of proper questions for a well designed question paper. Question bank is normally designed on based ideas, purposes, adapted to the particular objectives of mind. Question bank fulfils the information requirement range of the students' experiences and knowledge. Its value can be measured in terms of up-to-dateness, exhaustiveness, coverage and appropriate answer failing which it will lose its weightage (Angeline, 2018).

3.4.2 Virtual Library Services:

A virtual library is a collection of resources available on one or more computer systems, where a single interface or entry point to the collections s provided. The virtual library ensures the systematic development of the means to collect, store and organize information and knowledge in digital form and to provide easy and affordable access to it around the clock from various locations. A virtual library provides remote (on-line or CD ROM-based) access to a variety of national and international content (e.g. curricular, learning

materials, books, journals, magazines, newspapers), services traditionally offered by libraries and other information sources.

3.4.3 Ask a-librarian:

It is a live virtual reference service that offers online reference assistance to the users. Ask-a-librarian makes several efforts to meet user reference needs on smart phones and other mobile devices. It also includes text messaging service to accompany the traditional chat service. It can also be accessed through Ask a-librarian Mobile app, a mobile friendly interface geared towards improving the user chat experience on smart phones and tablets (AskALibrarian.org)

3.4.4 Bulletin Boards:

It is a website or web page where users can post comments about a particular issue or topic and reply to other user's postings. Bulletin board is a surface intended for the posting of public messages, to advertise items announce events, or provide information. Bulletin boards can also be entirely in the digital domain and placed on computer networks so that people can leave and erase messages for other people to read and see, as in a bulletin board system. Bulletin boards are particularly prevalent at universities also libraries. They are used to display information needed to be communicated to the users. Internet forums are a replacement for traditional bulletin boards. Online bulletin boards are sometimes referred to as message boards. The term bulletin board, message board and event Internet forum are interchangeable, although often one bulletin board or message board can contain a number of Internet forums or discussion groups. An online board can serve the same purpose as a physical bulletin board (Bulletin Board- Wikipedia).

Bulletin board is an electronic communication forum that hosts posted messages and articles connect to a common subject or theme or interest. It allows users to call in and either leaver or retrieves messages. The messages may be directed to all users of the bulletin board or only to particular users. But all messages can be read by all users. Several libraries are using bulletin boards for their web-based library services. The bulletin board system is also used as an interactive interface to invite suggestions on activities and services of a library. It can also be used as an interface to distribute library services (Bhatnagar, 2005).

3.4.5 Web Based User Education:

The web-based user education provides a high degree of interactivity and flexibility to the users. Web guides and teaching tools are found everywhere on the Web because they are easily updated, accessed and printed on demand. The web-based user education provides a high degree of interactivity and flexibility to the users. The library websites can use web-based user education for imparting training to users in teaching the basic library skills and instructions for searching electronic resources using Boolean operators and searching internet resources through search engines.

The most common way of providing web-based user education is by adding an additional content to the existing website. A web page contains text and graphical information that can be accessed o the Internet through a web browser. A web page is a resource on the World Wide Web (www) which can include any amount of information to educate the library users.

3.4.6 Web Forms:

Library websites have some web-forms for suggestions and comments on the library services. Different types of Web forms are available on web that may be an indent form for acquiring some publications, interlibrary loan request form for document delivery, ask-a-librarian forms, online reservation form or user survey form, etc. A web form or HTML form on a web page allows a user to enter data that is sent to a server for processing. Forms can resemble paper or database forms because web users fill out the forms using checkboxes, radio buttons, or text fields.

3.4.7 Access to Online Databases:

These are large collections of machine-readable data that are maintained by commercial agencies and are accessed through communication lines. Many libraries subscribe to them for easy access and use of current information. The disadvantage is that only bibliographic data is presented and not full text. The information cannot be accessed when the system is down for any reason. Examples SciFinder Scholar, Ei Compendex, Web of Science, Current Contents, etc. An online database is a database accessible from a local network or the internet as opposed to one that is stored locally on an individual computer or its attached storage like CD. Online databases are hosted on websites, made available as software as a service products accessible via a web browser.

3.4.8 FAQ:

The FAQs are listed questions and answers pertaining to a particular topic, all supposed to be commonly asked in some context. These are commonly used whether certain common questions tend to recur on email mailing lists and other online forums. Many library services have informative

websites that include archives of questions and answers and a set of FAQs. Users are usually encouraged to browse archives and FAQs before submitting a question in case sufficient information already exists.

3.4.9 Subject Gateways:

Subject gateways are a collection of websites on a particular subject. Unlike search engines subject gateways contain only web resources that have been evaluated by subject specialists. A gateway is defined as a facility that allows easier access to network based resources in a given subject area. Gateways provide a simple search facility and a much-enhanced service through a resource database and indexes, which can be searched through a web based interface. Information provided by gateways is catalogued by hand. Gateways cover a wide range of subjects, through some areas, such as music and religious studies, currently lack subject gateways. Some well-known gateways are as follows:

- Internet Public Library (IPL)
- Bulletin Board for Libraries (BUBL)
- National Information Services and Systems (NISS)
- LIS Learning
- LISGateway.com
- Infolibrarian
- AILLMIS- All India Libraries and Librarians Management Information System
- Internet Mathematics Library
- Chemdex
- Chemweb
- Links to Useful Data

A subject gateway is simply a classified directory for a specific subject, which is usually academic. Many subject gateways are run by librarians who are subject specialists and use existing classification schemes to evaluate web resources according to the same rigorous criteria they would use for more traditional resources. Although this ensures the material presented is relevant and up to date, the time required to evaluate resources in this way means that information gateways generally contain fewer resources than more general search engine.

Information is retrieved from subject gateway by browsing or searching by keyword in exactly the same way done in searching a classified directory. Again, it is important to remember that when one searches a subject gateway one is not searching the resources themselves, but only the records created for that resource. The subject gateways perform best for general queries for the same reason a classified directory does a very specific term is less likely to be included in a catalogued record. Again like classified directories, the resources subject gateways have been organised to enable structured browsing through subject hierarchies. Most information gateways are searchable and in response to a query will provide an abstract that has been written by experts in a specific field (Netskills and Desire).

3.4.10 Library Brochure:

As an information product a library brochure gives the detailed information about the library collection with pictures. It is a small capsule which throws light on important aspects of a particular library. The design and presentation of brochures should be attractive to the users. The language should be simple and should hold the interest of the user.

3.4.11 Accession List/ List of Additions:

Accession list/list of additions includes the list of records or volumes added to a library collection, showing the chronological order of the addition and it includes accession number, bibliographic information and cost of acquisition. This information product helps the users to know the latest collection added to the library.

3.4.12 webOPAC:

An online public access catalogue is an online database of materials held by a library group of libraries. Users search in library catalogue principally to locate books and other material available at a library. In simple language it is an electronic version of the card catalogue. OPAC acts as a gateway to the library's collection.

3.4.13 Research in Progress:

ShodhGangotri is a repository of Indian Research in Progress which gives details of synopses, research proposals for PhD programme , MRPs/PDFs/Emeritus Fellowship. Under the initiative the research scholars/research supervisors in universities are requested to deposit electronic version of approved synopsis submitted by research scholars to the universities for registering themselves for the PhD programme. It is also expanded to MRPs/PDFs/Emeritus Fellowship, etc. The repository on one hand would reveal the trends and directions of research being conducted in Indian universities; on the other hand it would avoid duplication of research. Synopsis in ShodhGangotri can later be mapped to full text theses in ShodhaGanga.

3.4.14 ETD (Electronic Thesis and Dissertation):

Theses and dissertations are known to be the rich and unique source of information, often the only source of research work that does not find its way into various publication channels. Theses and dissertations remain untapped and underutilized intellectual property assets, leading to unnecessary duplication and repetition that in effect, is the anti-theses of research and wastage of huge resources, both human and financial.

ETD replicates academic structure of the university in terms of departments/centres/colleges each university has to facilitate ease of navigation. This structure facilitates research scholars from universities to deposit their theses in the respective department/centre/college. A simple search and advance search will be available on the home page along with browsing facility through universities and departments. The centre is also developing a semantic web based interface to facilitate subject based browsing, navigation, search and retrieval of content available in the repository. The Vidyanidhi, INDEST Consortium, CSIR and INFLIBNET Centre are working towards implementation of open access ETDs or bibliographic databases of theses and dissertations.

Examples:

- ShodhaGangotri
- NDLTD
- Kanasa State University ETD
- West Virginia University ETD
- NCSU ETD

Online availability of electronic theses through centrally maintained digital repositories will not only ensure easy access and archiving of doctoral theses and dissertations (Kharpade and Ambedkar, 2014).

3.4.15 Link to e-books:

An electronic book known as an e-book is a book publication made available in digital form, consisting of text, images, or both, readable on the flat panel display of computers or other electronic devices (Gardiner and Ronald, 2010). E-books can be read on dedicated e-reader devices, but also on any computer device that features a controllable viewing screen, including desktop computers, laptops, tables and smart phones.

E-books come in a variety of formats as well. They are also available on CD-ROM or floppies. Using Internet facility they can down-loaded in pdf, html, plain text and rich text formats. Many e-books are available for free and can be downloaded easily. In addition to this there are so many publishers providing the products of e-books. The e-book packages are also offered by the vendors and aggregators. Librarians have to organize them on the net for timely and easy retrieval. These e-books will be given a hyperlink so that if a user clicks on this hyperlink he/she will be directed to the site where these are stored properly. Hence link to e-books is a major information product through which thousands of books either freely downloaded or purchased on different subjects can be located for use.

3.4.16 Link to e-Journals:

With the growth and development of World Wide Web, there has been a radical growth in the number of e- journals. A subset of these journals exist as Open Access titles, having Creative commons licences which permit the

reproduction of content in different ways. High quality open access journals are listed in Directory of Open Access Journal. Other e-journals continue to exist as subscription journals, for which libraries, organisations and individuals purchase access. The subscription based e-journals could be accessed either through consortia or through individual subscription.

The e-journals whether available on open access or subscription need to be aggregated using a hyperlink as in the case of e-books. Again these links help to navigate within the e-journals. Hence this link to e-journal acts as an alerting information product.

3.4.17 Link to e-Coursewares:

Courseware refers to a software program especially designed for educational purposes. Course wares are now available online with various resources and supporting material like reference books, research papers and journals. Coursewares are supplemental to traditional classroom taught courses, or can be standalone courses themselves. Many apex bodies like AICTE, NCTE, UGC-INFLIBNET, Karnataka State Open University, Mysuru, Indira Gandhi National Open University, New Delhi and many other institutions are also developed cousewares for different programs. In addition to this, individual institutions, organizations, universities have developed their own e-coursewares and have made them accessible on Internet by giving proper hyper linking. This linking helps in retrieving the proper course material by the stakeholders.

Examples:

- e-pgpathashala
- Gyankosh
- NPTEL E-Learning
- UGC-CEC E-content
- ICAR E-Courses
- Jnana Nidhi
- Project Ekalvya
- Project OSCAR

3.4.18 Current Awareness Bulletins:

The Current Awareness Bulletin is provided as a monthly digest of news and publications focusing on subjects and themes related to the work.

Examples:

- NMIC Bulletin
- ICAR Bulletin
- National Museum Research Bulletin
- Current Awareness Bulletin of Centre for Women's Development Studies

3.4.19 Bibliographies:

A bibliography is an organised listing of books and the systematic description of books as objects. It is a list of all the sources used in the process of researching a work. In addition to acquiring subject bibliographies, the library is expected to compile different subject bibliographies on subjects of demand among user community or ongoing research projects. These play a vital role as information products in locating the relevant literature

3.4.20 Data Sheets:

A data sheet is a document which documents the performance and other characteristics of a product, machine, component, material, subsystem, or software in sufficient detail that allows a customer to understand what the product is and a design engineer to understand the role of the component in the overall system. Typically, a datasheet is created by the manufacturer and begins with an introductory page describing the rest of the document, followed by listings of specific characteristics, with further information on the connectivity of the devices. In cases where there is relevant source code to include, it is usually attached near the end of the document or separated into another file.

Data sheets are created, stored and distributed via product information management or product data management systems. Depending on the specific purpose, a datasheet offers an average value, a typical value, a typical range, engineering tolerances or a nominal value.

3.4.21 Handbooks/Manuals:

A handbook is a book giving information such as facts on a particular subject, or instructions for operating a machine. It is a comprehensive and handy work on a particular topic for practitioners, structured for quick reference. It is a ready reference source. Shores (1954) defined a handbook as "a reference book of miscellaneous facts and figures on one or many subjects assembled for ready use, in response to popular interest or to a specific need for concise, handy information." A handbook, deals with any topic, and is generally a compendium of information in a particular field or about a particular technique. Professional organizations also prepare a variety of handbooks meant for different types of users, such as technical personnel, industrial workers, and office staff and so on.

Example:

- Staff Manual – A handbook
- Handbook for Election Officials
- Universities/Colleges Prospectus

Manual is a brief reference book dealing with a particular process, operation, mechanism, job instruction, etc. It is regarded as a comprehensive step-by-step guide to a particular topic both for beginners and practitioners. It is essentially an instruction book which instructs how to do something with clear directions. It usually accompanies a technical device and explains how to install

or operate it. Therefore, it means how certain thing happens, or how a particular job should be done. However, sometimes it is difficult to distinguish it from an average handbook as observed by Katz (1982). A manual has a limited scope, and usually it focuses on a specific area of interest. According to Katz, its particular value is its depth of information in a narrow field of knowledge.

Examples:

- CBSE Manual
- Examination Manual
- COVID-19 SOP manual

3.4.22 Expert Database/ Database of Experts:

It is the database of profiles of scientists/researchers and other faculty members working at leading academic institutions and other R & D organisation involved in teaching and research. It provides important information about expert's background, contact address, experience, scholarly publications, skills and accomplishments, researcher identity, etc. The database would be instrumental in selection of panels of experts for various activities or committees for monitoring and evaluation purpose. This database can quickly and conveniently provide information about expert to peers, prospective collaborators, funding agencies policy makers and research scholars. It can help to establish communication directly with the experts who possess the expertise needed by the users. It can also identify peer reviewers for articles and research proposal and to create information exchanges and networking opportunities among scientists. Also helps to discover prospective collaborators for on-going research projects.

Examples:

- Vidwan
- Anusandhan: Indian Science and Technology Portal
- NSTMIS: database of experts in mathematics
- e-Acharya
- Indian Scientists Database

3.4.23 State-of- the-art Reports:

State-of-the-art reports are another important information consolidation products required by scientists and other researchers. These are the type of reviews which do not have an all compassing scope. These lay emphasis on currency and up-to-dateness of a situation. State-of-the-art report is the highest level of development of a technique, or scientific field, etc., accomplished during a particular time. The aim of such reports is to describe a very recent situation. Hence it can be considered as a current awareness source for a specific group of users. These reports summarize, compare and evaluate the advances, characteristics and/or utilization of a given technological product or process. The scope and emphasis differ according to the technical and engineering aspects, use aspects, management aspects, and strategic aspects.

The state-of-the-art-report such as reviews, advances, progresses, surveys, trend reports and so on are published to bridge the gap between these two types of publications. They are published periodically to present in a suitable form, analysis of the progress made through research and practice.

3.4.24 Trend Reports:

Preparing trend reports is the practice of collecting information and attempting to identify a trend or pattern in the information. Trend reports

usually furnish indicators of variations of control parameters against planned objectives. These sources provide systematic outlook of latest developments and current research trends in a subject field during a specific period of time. The trend reports provide an insight about how a subject has performed during a particular period. These are usually prepared by information specialists with assistance from subject specialists, and written with help from technical writers to ensure an acceptable use of language, etc.

A trend report is an exposition of a subject, giving an account of the general direction of research in the subject, based on a review of the documents on current developments. The trend report is designed to help the specialist reader in the productive utilization of his time and in the conservation of the research potential. The main aim of the trend report is to fulfil the requirement of a specialist user of specific information on a particular subject. It is a highly useful tool to analyse and consolidate the information which facilitates the specialists in their research work (Saha).

Trend reports constitute one of the important IAC products. They provide a systematic overview of new developments taking place in any subject along with current research trends. A trend report may also be considered a useful documentation service. It may be stated that a trend report provides an exposition of a subject,

3.4.25 Technical Digests:

Technical digests are considered important information products as source of information for managerial and technical workers in industrial, commercial, scientific and other such establishments. But the multi-dimensional growth of information relating to their needs has been making it difficult to

keep them updated about the latest developments of new products, machinery, processes, techniques, etc. In order to meet their information requirements a specialized service called technical digest service, has been prepared. Technical digest includes in its scope primarily science and technology, but it is not limited to it only.

3.4.26 Translation Pools:

Translation is the process of transferring the information contents of the text in one language into another language. The translation work is undertaken by individual translators or translating agencies. In many countries national translation centres were setup to monitor translation activities in the country. These centres either carry out translation work themselves or acted as referral centres for collecting, processing and announcing the translation done by various agencies in the country. These centres maintain a panel of translators – professional freelance translators as well as appointed professional translators. The centres will have a directory of translators known as translation pools. Further all the translated works will be preserved for further use. Translation work is usually carried out on demand. In some cases translation from one favoured language to the required language will be done in anticipation.

Examples:

- NISCAIR Foreign Language Translation Service
- National Translation Centre, Chicago
- International Translation Centre, Hague
- NCERT Translation Service

3.4.27 In-house Journals:

An in-house journal is defined as an internal publication produced by an organization in order to inform and entertain its employees and to generate better internal communication and relationships. In-house journals are serial publications like the newsletters, published by industrial and commercial organizations, corporations, business houses, public sector undertakings and similar other organizations. These are meant for circulation among their customers, shareholders, employees, dealers, retailers, etc. to inform them about their products, performance and other activities.

There are three broad categories of house journals- internal, external and combinations of both. Internal house journal is published for employees or members of the organisation, whereas external house journal is brought out for customers or potential customers of the organisation. Combination publication tries to do both.

3.4.28 E-Newsletters:

Seetharama (1997) defines a newsletter "as a serial consisting of one or few pages, usually printed, and containing nascent information or news which is of interest to a special or particular group of users and which is published periodically". Newsletters are, periodical publications issued by various organizations, institutions, government departments, professional societies, trade and industry associations, etc, providing speed information to their members and subscribers. These are also issued by commercial and research organizations to make their users aware of the new products. Some organizations publish newsletters as a substitute to journals and contain limited pages.

Newsletters published and distributed electronically over the computer networks are known as electronic newsletters. They are the publications that are regularly developed and distributed by businesses, charitable organizations, societies, academic and research institutions. They are an effective way to disseminate the activities of the institution and also to promote information products and services.

Examples:

- INFLIBNET Newsletter
- NISCAIR Newsletter
- ILA Newsletter
- IASLIC Newsletter

3.4.29 Institutional Repository of the University:

Lynch (2003) defines an Institutional Repository as an organization based set of services which the organization offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members. It is most essentially an organizational commitment to the stewardship of these digital materials, including long-term preservation, where appropriate, as well as organization and access or distribution".

According to Drake (2004) it is a digital collection of a university's scholarly/creative output. IRs collects preserves, and makes accessible the knowledge generated by academic institutions. IRs also forms part of a larger global system of repositories, which are indexed in standardized way and searchable using one interface, providing the foundation for a new model of scholarly publishing". An institutional repository is an online locus for collecting,

preserving and disseminating- in digital form- the intellectual output of an institution, particularly a research institution. For a university, this would include materials such as research journal articles before (preprints) and after (post prints) undergoing peer review and digital versions of theses and dissertations, but it might also include other digital assets generated by normal academic life, such as administrative documents, course notes or learning objects.

Examples:

- OpenMED@NIC
- Digital Knowledge Repository of Drug Research Institute Repository
- IBS Ahmedabad Repository
- Open Access Repository of IISc Research Publications
- Electronic Theses and Dissertations at Indian Institute of Science
- EPrints@IITDelhi
- eGyankosh
- Digital Library at ISIB

3.4.30 Reviews:

Saracevic and Wood (1981) have defined a review as "as a critical synthesis of the state of knowledge in a given subject or topic; it is a critical examination of information and literature on a subject or topic accommodated in its broader framework. Reviews are prepared by information selection, analysis, evaluation, restructuring and repackaging for satisfying information requirements of users working in a given subject field.

3.4.31 Trade Literature Bulletins:

Trade literature is a generic term which includes trade bulletins and catalogues, etc. It may be defined as "catalogue and other advertising or

promotional material distributed by business firm usually free of charge. They promote sales by making claims about product attributes, give instructions in using products, and include detail descriptions of sale products and so on.

Trade and product bulletins are information products brought out by the publishers, manufacturers and distributors of various types of materials, products or services. The trade bulletins virtually cover every kind of material, product or service ranging from books, drugs, chemicals, household goods to extremely complicated machinery and equipment used in research and industry. The basic purpose of this type of trade literature is to describe various attributes of the product, material or service and promote its sale to the potential customers. They are also known as trade catalogues.

3.4.32 Infographics:

These are graphic visual representations of information, data, or knowledge intended to present information quickly and clearly. They have evolved in recent years used for mass communication. In the present days academicians, researchers and others are very much interested in infographics as they can easily visualize information and data.

3.5 Information Services:

3.5.1 Reference Service:

The term “reference service” is defined simply as personal assistance provided to library by users seeking information. Reference service has been traditionally offered in person at a designated desk within the library building, over the telephone and through correspondence. In the digital environment, libraries have expanded to offer reference service electronically via World Wide Web, e-mail, and even two-way videoconferencing. Regardless of the delivery method, the

value of reference service to library users is it is provided at the time of need. Reference service is characterized by human interaction (Reference Service).

3.5.2 Referral service:

Referral services aim to refer users to the sources of information such as secondary publications, information units, professional organizations, research institutions and specialists/experts. Such services do not provide the documents or information required by the user for his/her query but give the direction where information is available. Librarians utilize directories and databases on sources, specially designed and developed for rendering referral services.

3.5.3 Literature Search Service:

A literature search is a systematic, thorough search of all types of literature (eg. Books, peer reviewed articles, databases, etc.) on a topic (Literature Search Service). It is an extension of reference service. This service includes analysis of the search parameters of a query, formulation of a suitable strategy for searching different information sources, identification and choosing of most appropriate sources to be searched and the order of searching them and also understanding of retrieval features of online databases and CD-ROM. Librarians who work with the professional Literature Search Service conduct searches to find relevant studies for different types of reviews.

3.5.4 Current Awareness Service:

Current Awareness Service (CAS) satisfies users' current approach to information and thereby keeps them up-to-date in the field of their work. The important characteristics of CAS are:

- It is a technique of communicating current information to users.

- It provides latest developments in a subject field and does not provide answer to any specific query.
- Generally covers a broad subject area and supplements the user's own channel/media of obtaining information.
- It is known for speed and timeliness
- It is meant for use before its contents are absorbed by secondary publications like abstracting and indexing journals.

CAS may be provided through variety of media and channels such as current awareness lists, current contents, routing of periodicals, list of research in progress and forthcoming meetings/seminars/conferences, newspaper clippings, etc. (Patel, 2015).

3.5.5 Selective Dissemination of Information:

Selective Dissemination of Information (SDI) service is a type of alerting service meant for individual users, mainly specialists, which is exclusively restricted to the area of interest of the user concerned. SDI is a special type of current awareness service. It provides each user with the references of documents to their predefined areas of interest, selected from document published recently or received during a particular span of time. The workflow of SDI as a computer mediated information service is based on the following steps:

- Create user's profile
- Create document profile
- Matching the User's profile and document profile
- Give the notification to users
- Take a feedback from the users.

3.5.6 Newspaper Clipping Service:

Online newspapers and online services based on newspapers are becoming increasingly popular and useful in current digital age. These services helped libraries in reaching out users wherever they are and also save time of the users. The newspaper clippings are also known as press clippings in some libraries. With the rapid change in technology and user needs, now focus has been shifted to digital/online news clippings (Gaur, 2013).

3.5.7 Abstracting Service:

An abstracting service is generally a bibliographical service that provides bibliographical details of a publication along with the abstract of the same. Each abstracting service provides a number of indexes such as issue index, volume index, author index, subject index, etc. In database form, it is generally updated daily. An abstracting service not only publishes an abstracting periodical but also various by-products. For example, Chemical Abstracts Services bringing out Chemical Abstracts and also generates databases like CAplus, CAS Registry, STN (Scientific and Technical Information Network), SciFinder, and CASSI (Chemical Abstracts Service Source Index)

3.5.8 Data Service:

Data services are web services used to handle the programming logic for data virtualization in a cloud-hosted data storage infrastructure. Data services are useful when organizations use a heterogeneous storage infrastructure. In these situations data can be stored in many places and consumers of the data need ways to find and analyze the information they need without concern for the specific location of that data. Data services once created are reusable,

making it possible for the organization to save a great deal of time on future development (Informatica).

3.5.9 Translation Service:

Translation service is an important service provided by the libraries and translation service helps enhancing the use of documents. Under translation service the library patron generally requests the library to make the translation of the required article which is in the language other than they understand. Translation service is a highly intellectual activity and it requires qualified staff having knowledge of the language.

Translation service is required by the researchers for crossing over the language barrier and saving their valuable time. Translation agencies are in existence at different levels- local, national and international. They employ translators and /or utilize the revises of freelance translators and supply translations against payment. There are also translation pools – maintained both at national and international levels- which make available their holdings to each other through mutual cooperation. For easy and quick location of translations, the centers operating the translation pools maintain or bring out printed indexes (Chatterjee, 2017)

Examples:

- International Translation Center
- National Translation Center
- NISCAIR
- World Translation Index
- NISCAIR Foreign Language Translation Service

3.5.10 Technical Enquiry Service:

Technical enquiry service provides guidance on matters, professional codes including the statement of financial reporting practice other financial reporting issues, governance and audit issues. It seeks to be as helpful as possible in providing technical clarification to its members on the above matters but should not as a matter of the institute's policy be taken as a substitute for professional judgement independent research or professional advice.

3.5.11 Reprographic Service:

It is a service where photocopies of documents are supplied to the users on demand for fair use without violating the provisions of IPR. It is a very popular service in different types of libraries particularly academic libraries like universities.

3.5.12 Inter Library Loan Service:

Interlibrary loan is a practice where participating libraries who establish agreements share library resources with one another to enhance their collections.

3.5.13 Document Delivery Service:

Document delivery service refers to the physical or electronic delivery of a document from a library collection to the residence or place of business of a library user, upon request. Various media are employed for document delivery, such as delivery from circulation desk within the library, or at the user's doorstep by messenger or by post/courier, transmission through fax, delivery of document recorded on CD/DVD, transmission of soft copy through intranet or as e-mail attachment (Chatterjee, 2017).

Examples:

- British Library Document Supply Centre
- INFLIBNETS Document Delivery Service

3.5.14 Bibliometric Services:

Service provided to help research community to access, use and interpret bibliometric and altmetric data and indicators.

3.5.15 Outreach Service:

In libraries, outreach service is described as service for those who are infrequent users or nonusers. Essential services and outreach services complement each other. Creative outreach services are often so well received that they become routine and expected, promoting the development of essential services. This process results in the further this development and serve patrons is to identify the differences between essential services and outreach services and offer both with one goal services and outreach services, and offer both with one goal in mind of meeting users' information needs. (Shaorong Liu, 2013)

3.5.16 Question Paper Bank:

Many universities/institutions maintain old question papers for the benefit of students. Now the question papers are archived and put in digital forms to provide free access to the users.

3.6 Conclusions:

The information products and services have been operationally defined and the concepts have been explained briefly to provide how these terms have been considered in the study. In the next chapter, these products and services as reflected in the university websites is provided.

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CHAPTER-4
INFORMATION PRODUCTS AND SERVICES AS REFLECTED IN THE UNIVERSITY WEBSITES

4.1 Introduction:

An attempt has been made here to provide a pictorial view of information products and services provided by university libraries under study as reflected in the university websites. Wherever static descriptions are there such pages have been avoided. The websites were searched between 09.08.2014 and 22.10.2015. There screenshots were taken and are provided in this chapter to support Chapter 6: Data Analysis and Interpretation.

4.2 University Websites:

4.2.1 Bangalore University, Bengaluru (www.bangaloreuniversity.ac.in)

Fig 4.1 Home page

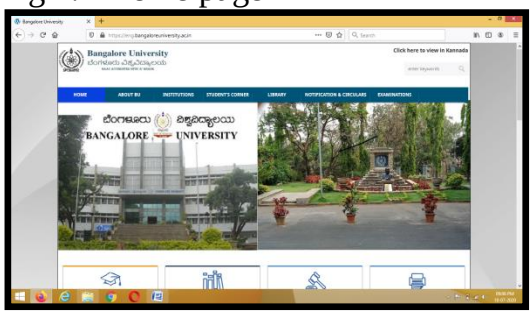
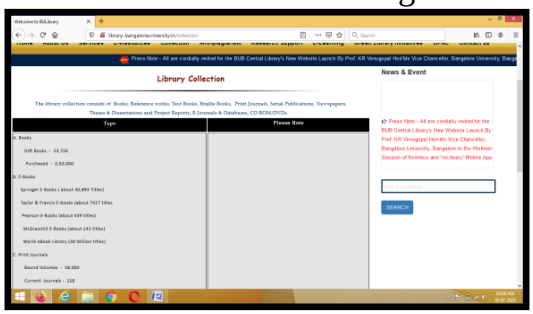


Fig 4.2: University Library

Fig 4.3: Library Collection



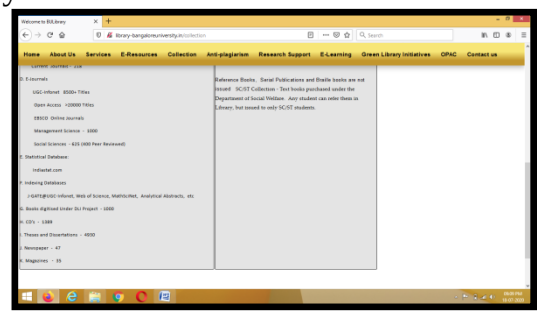
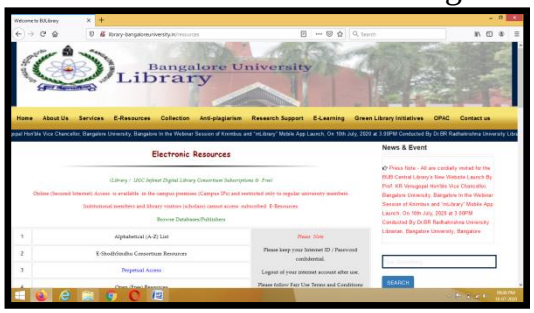


Fig 4.4:E Resources



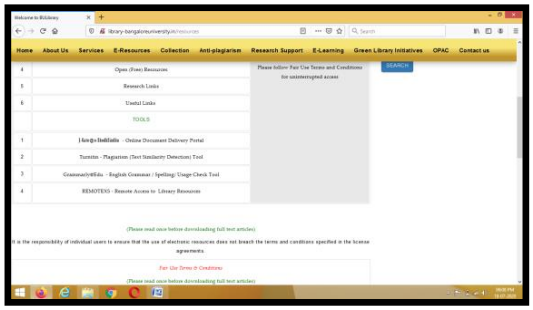
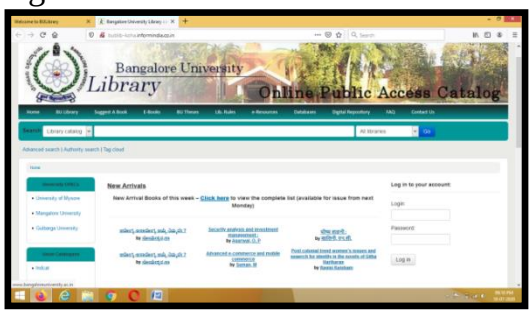
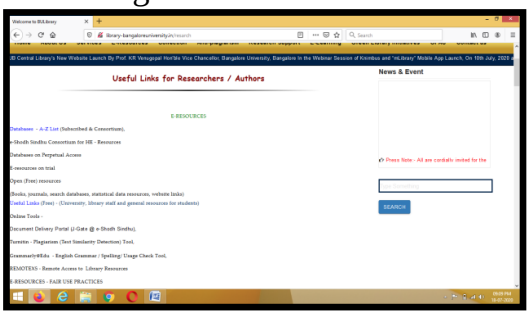


Fig 4.5: OPAC

Fig 4. 6: Link to e-resources

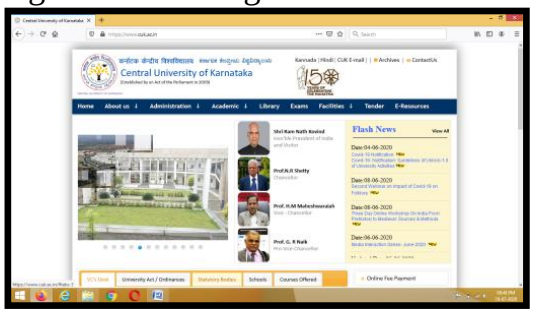




4.2.2 Central University of Karnataka, Kalaburagi (www.cuk.acin)

Fig4. 7: Home Page

Fig 4.8: Library



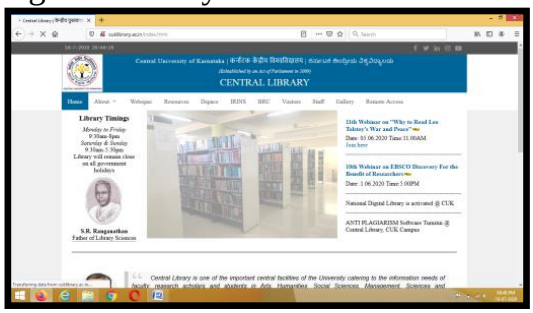
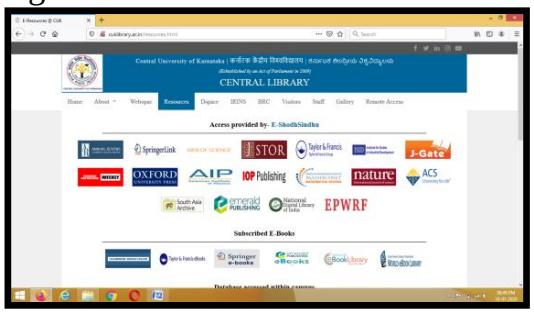


Fig 4.9: E- Resources

Fig 4.10: Databases



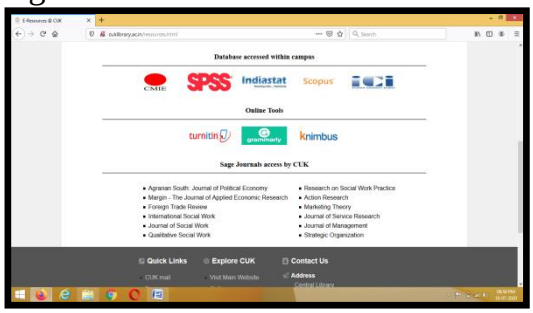


Fig 4. 11: Access to Remote databases

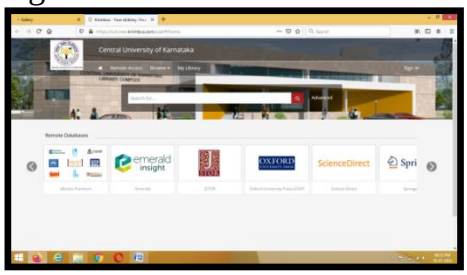


Fig 4.12: webOPAC

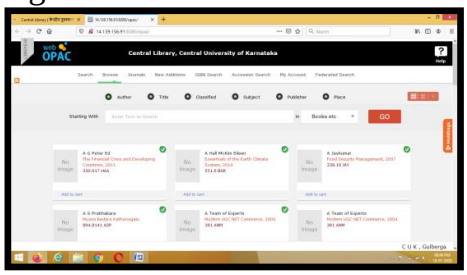
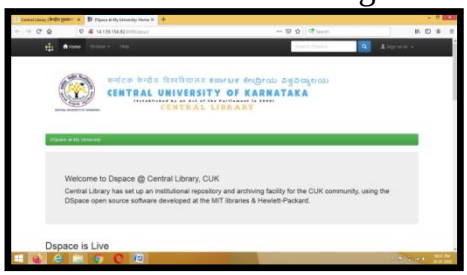


Fig 4.13: Institutional Resources



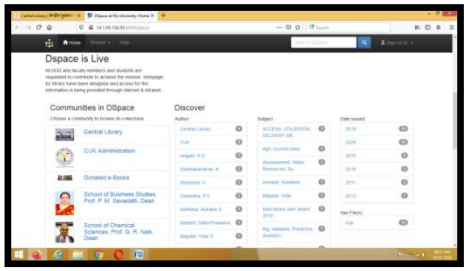
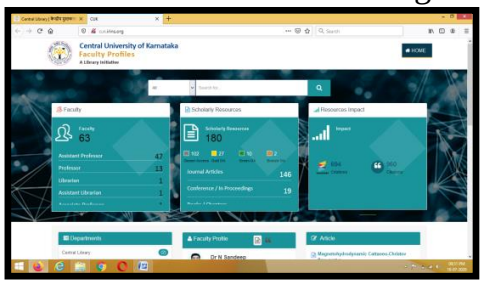
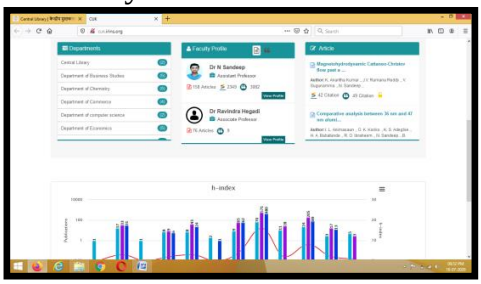


Fig 4.14: Faculty Profile





4.2.3 Davanagere University, Davanagere (www.davangereuniversity.ac.in)

Fig 4.15: Homepage

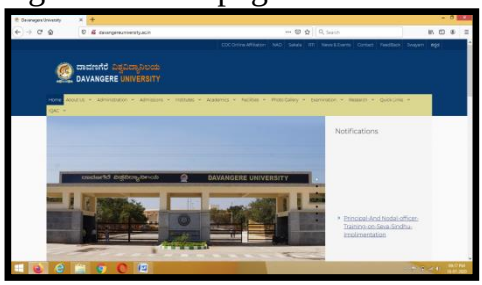


Fig 4.16: Library

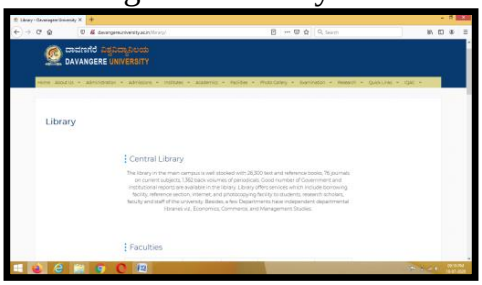


Fig4.17: Access to e- resources

4.2.4 Gulbarga University, Kalaburagi (www.gug.ac.in)

Fig 4.18: Home page

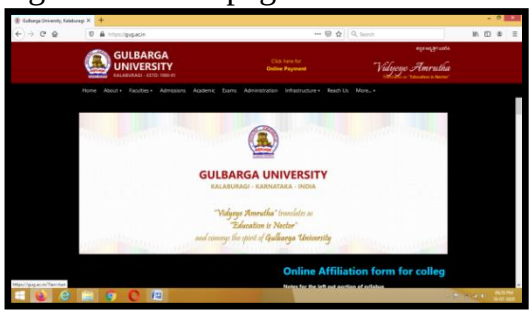


Fig 4.19: Library

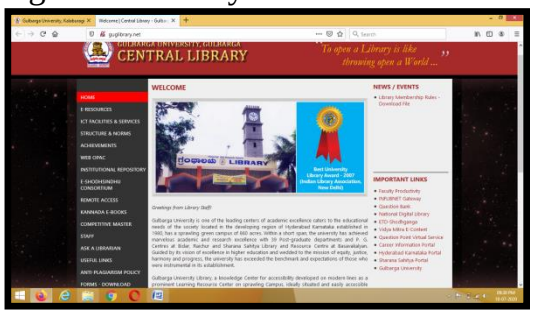
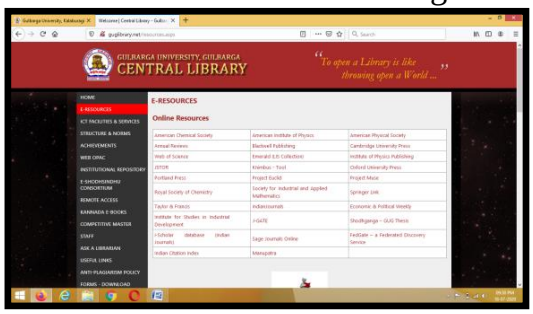


Fig 4.20: E-Resources



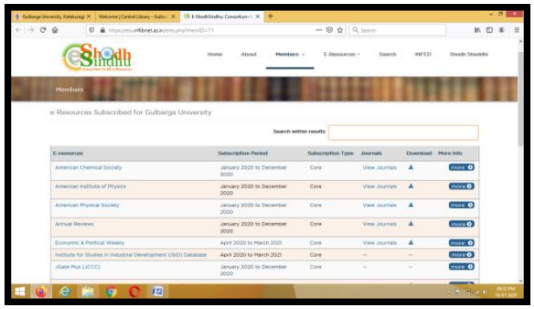


Fig 4.21: OPAC

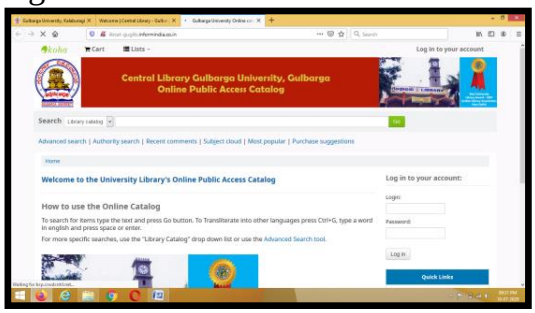

Central Library Gulbarga University, Gulbarga
Online Public Access Catalog
Welcome to the University Library's Online Public Access Catalog
How to use the Online Catalog

Fig 4.22:ebrary

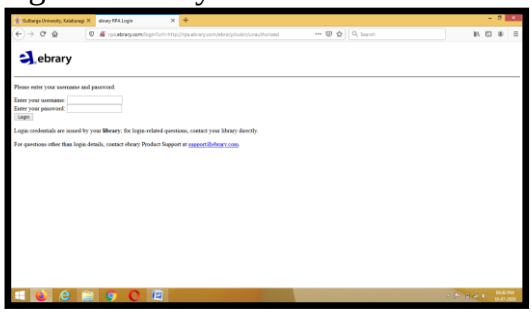


Fig 4.23: Online digital library

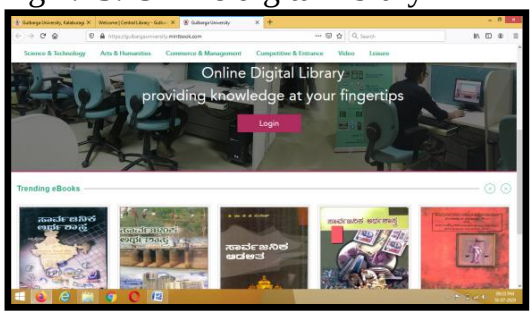


Fig 4.24: Ask – a - librarian

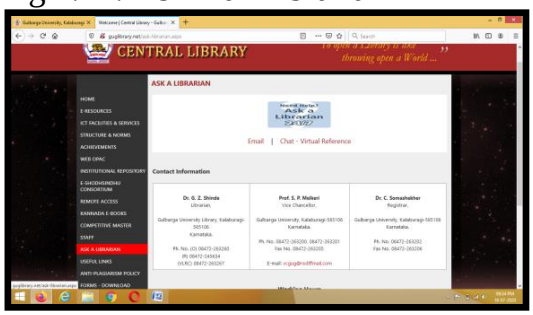


Fig 4.25: Career information service

GULBARGA UNIVERSITY, GULBARGA
CENTRAL LIBRARY
"To open a Library is like throwing open a World ..."
CAREER INFORMATION PORTAL
CAREER INFORMATION RESOURCES

Fig 4.26: Competitive Examination Catalogue

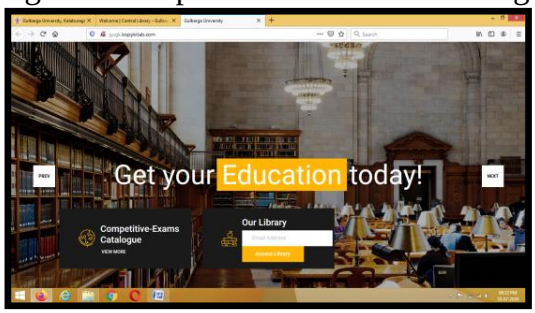


Fig 4.27: Access to Vidyamitra

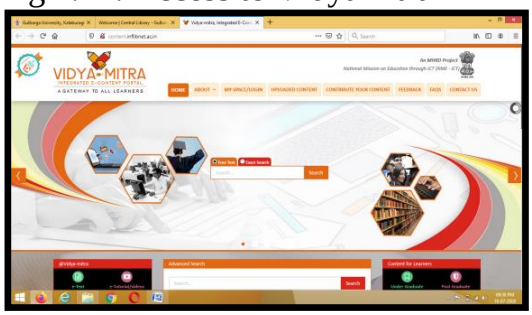


Fig 4.28: Faculty Profile

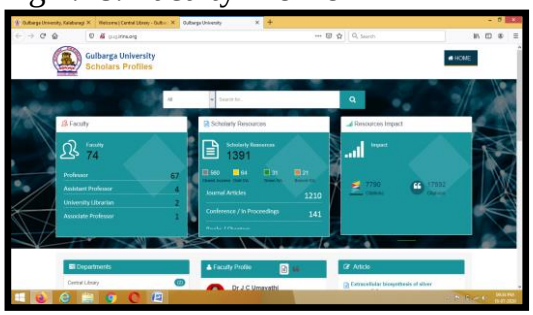


Fig 4.29: Institutional Repository

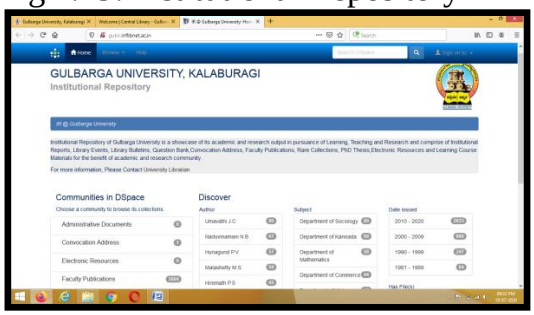


Fig 4.30: Question Bank

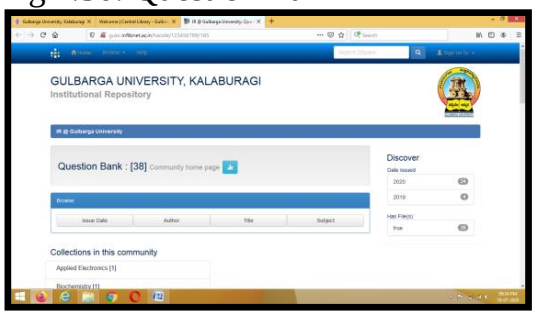


Fig 4.31: Off-campus access

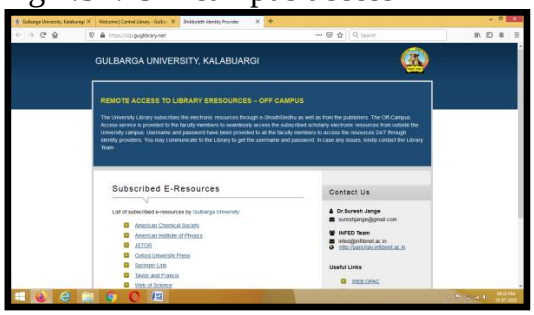


Fig 4.32: Virtual services

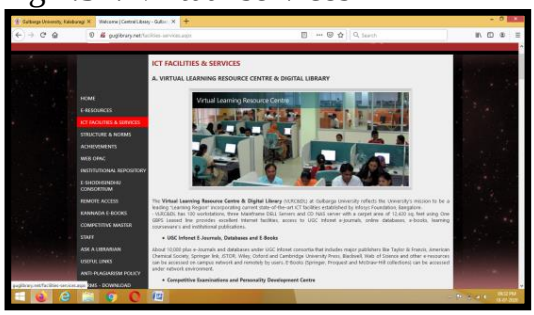


Fig 4.33: Subject gateway

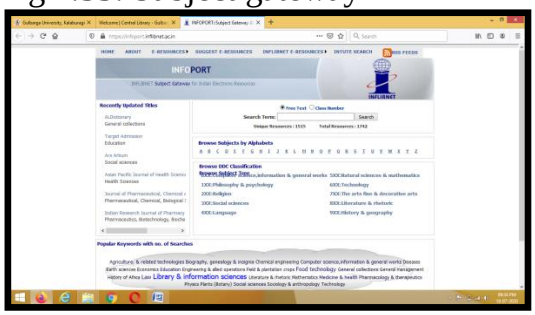
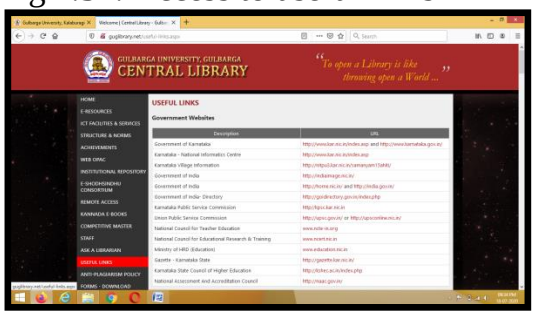


Fig 4.34: Access to useful links



4.2.5 Kannada University, Vidyaranyapura (Hampi) (www.kannadauniversity.org)

Fig 4.35: Home page

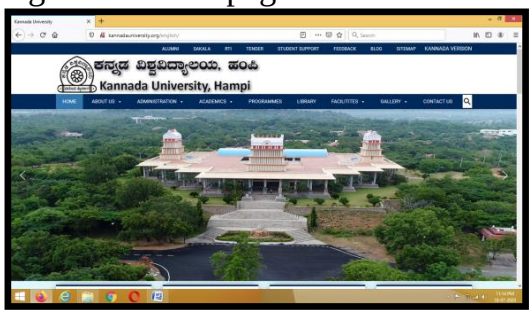


Fig 4.36: Library

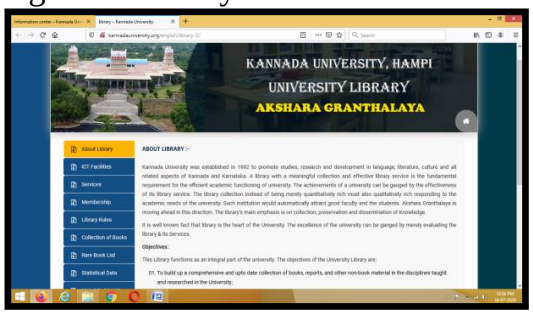
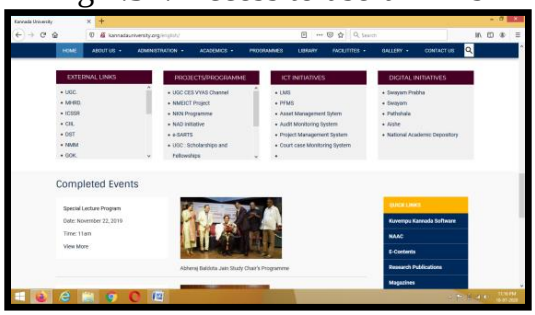


Fig 4.37: Access to useful links



4.2.6 Karnatak University, Dharwad (www.kud.ac.in)

Fig 4.38: Homepage

Fig 4.39: Library

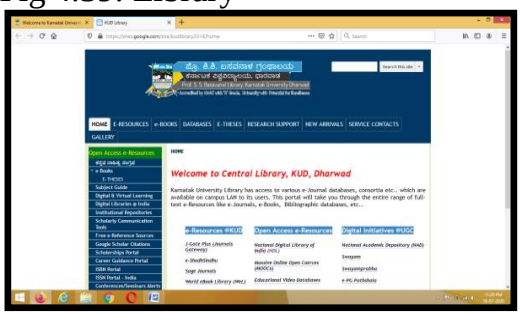


Fig 4.40: Access to ETD's

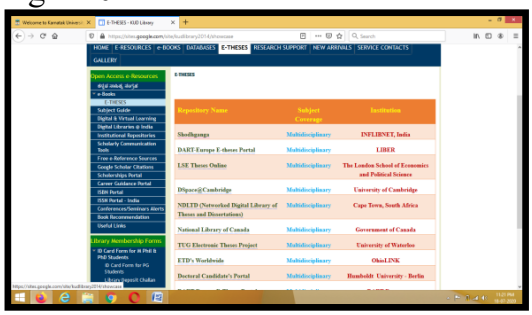


Fig 4.41: Open Access Resources

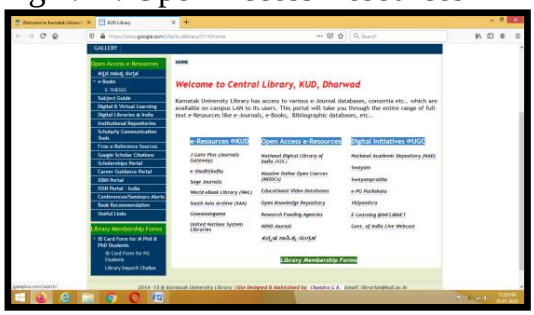


Fig 4.42: Access to E- Journals

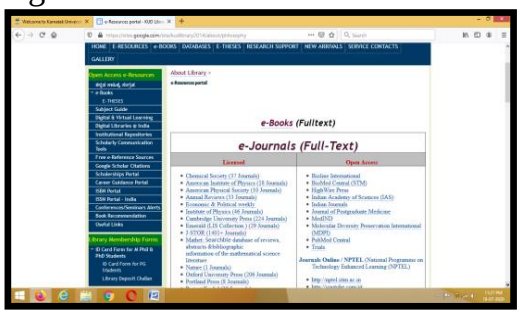


Fig 4.43: Link to E-Books

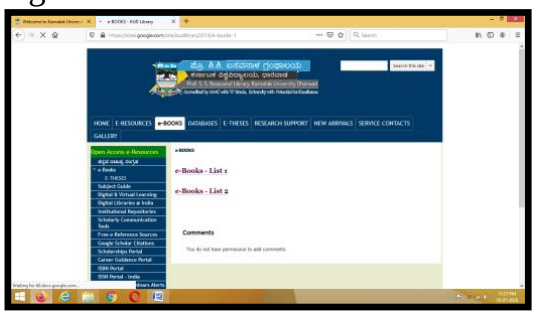
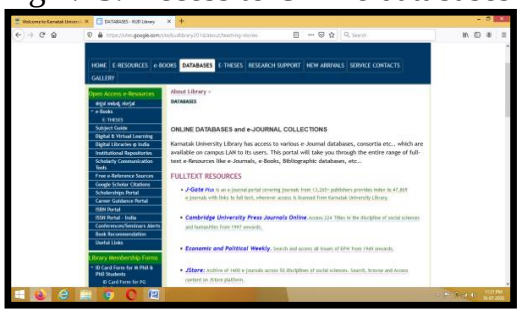


Fig 4.44: New arrivals

Fig 4.45: Access to Online databases



4.2.7 Karnataka Folklore University, Gotagodi, Shiggavi (www.janapadauniversity.ac.in)

Fig 4.46: Home page

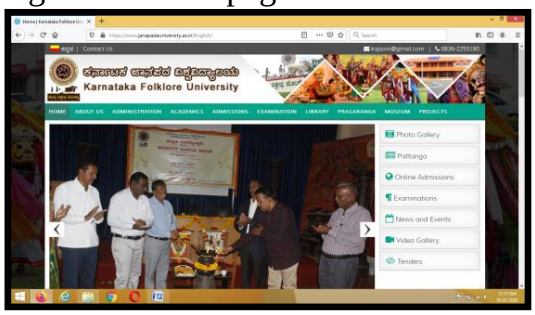
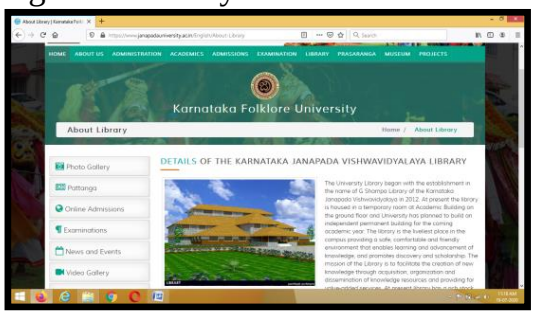


Fig 4.47: Library



4.2.8 Karnataka State Law University, Hubballi (www.kslu.ac.in)

Fig 4.48: Home page

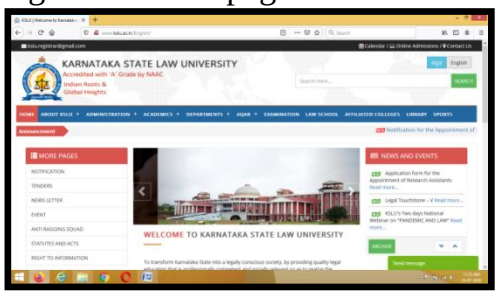
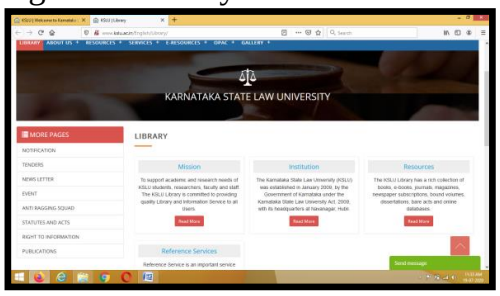


Fig 4.49: Library



4.2.9 Karnataka State Dr. Gangubhai Hangal Music and Performing Arts, Mysuru (www.musicuniversity.ac.in)

Fig 4.50: Home page

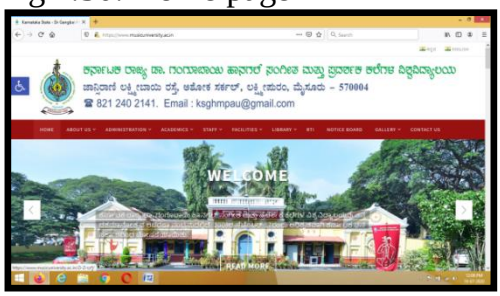


Fig 4.51: Library

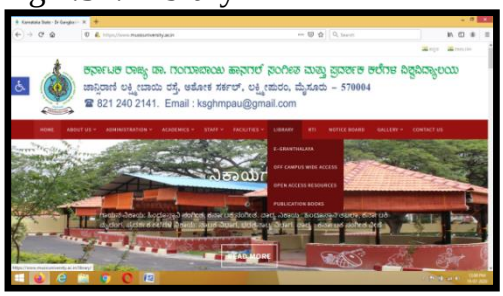
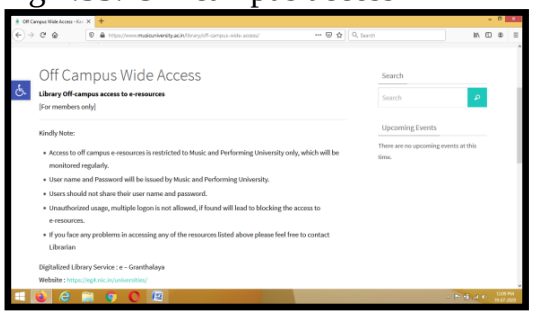


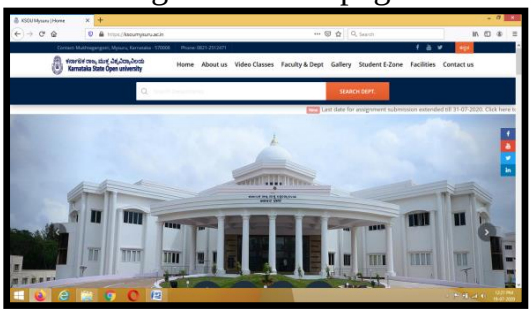
Fig 4.52: OPAC

Fig 4.53: Off-campus access



4.2.10 Karnataka State Open University, Mysuru (www.ksoumysuru.ac.in)

Fig 4.54: Homepage



4.2.11 Karnataka State Akkamahadevi Women's University, Vijayapura (www.kswu.ac.in)

Fig 4.55: Home page

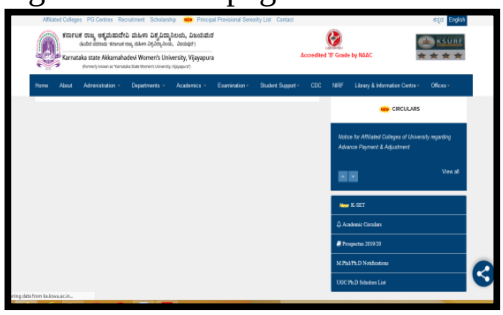


Fig 4.56: Link to E-Books

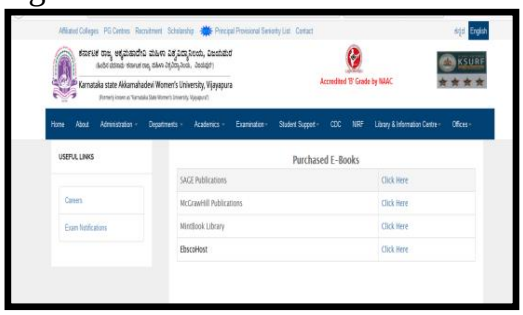
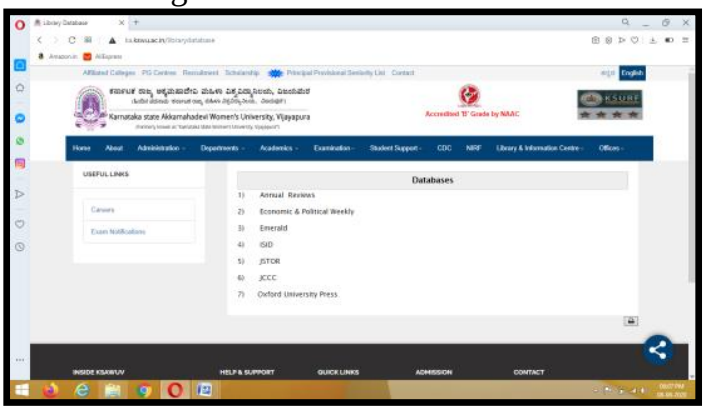
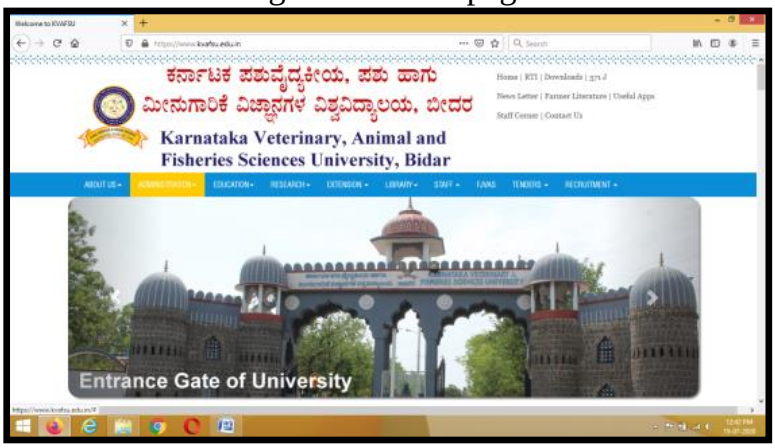


Fig 4.57: Access to Databases



4.2.12 Karnataka Veterinary, Animal and Fisheries Science University, Bidar (www.kvafsu.edu.in)

Fig 4.58: Home page



4.2.13 Kuvempu University, Shankaraghatta (www.kuvempu.ac.in)

Fig 4.59: Home page

Fig 4.60: Library

Fig 4.61: OPAC

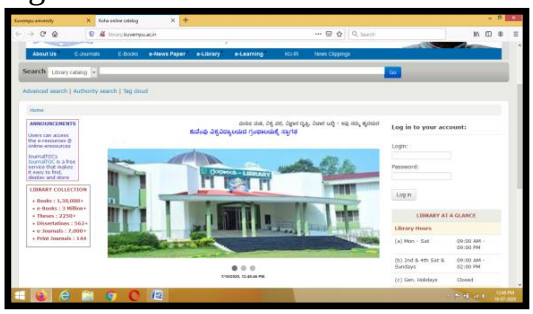


Fig 4.62: Institutional Repository

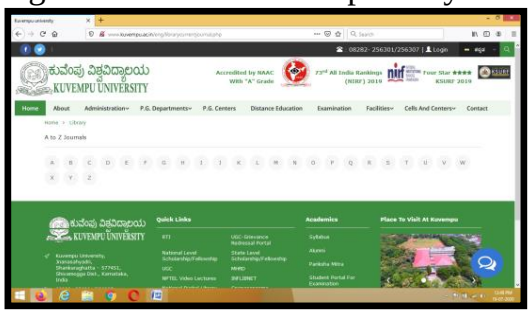


Fig 4.63: Knowledge Repository

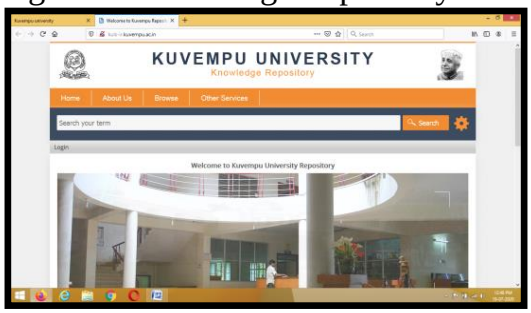


Fig 4.64: Digital Library

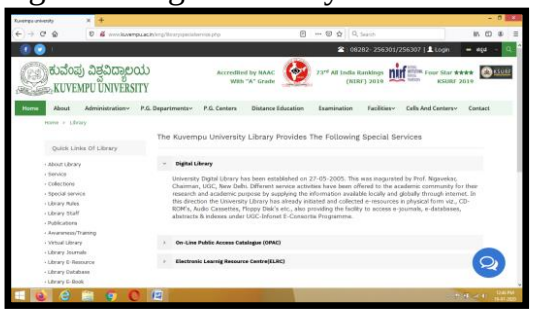


Fig 4.65: E-Resources

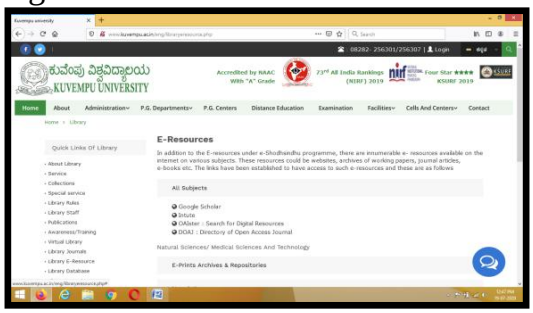


Fig 4.66: Access to E-journals

Fig 4.67: Library publications

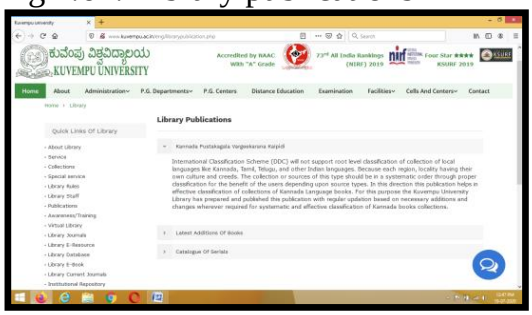


Fig 4.68: Access to E-Databases

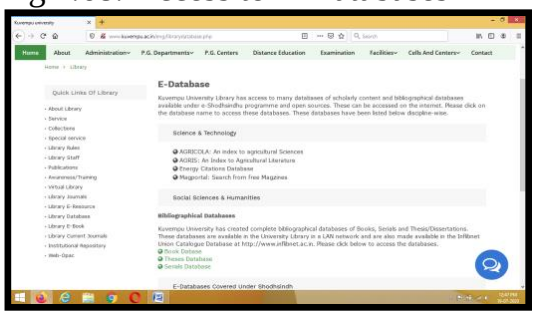
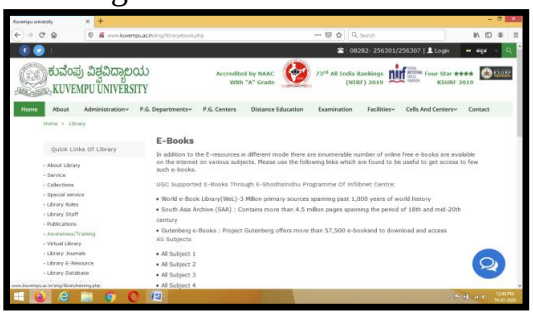


Fig4. 69: Link to E-Books



4.2.14 Mangalore University, Managalagangothri (www.mangaloreuniversity.ac.in)

Fig 4.70: Home page

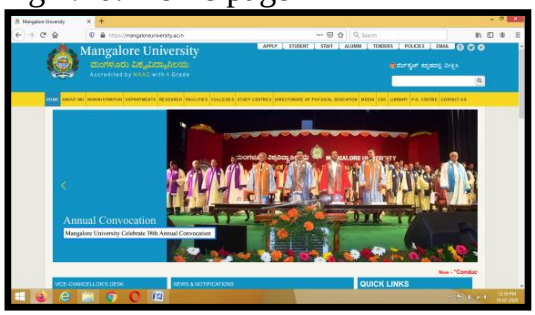


Fig4. 71: OPAC

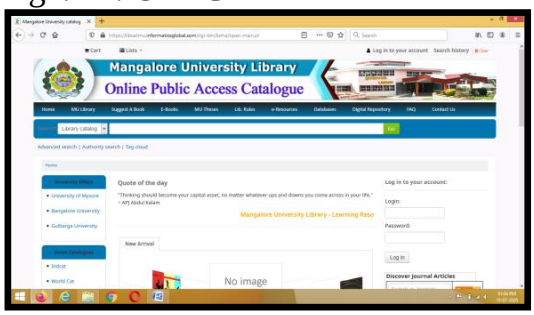


Fig 4.72: E-Resources

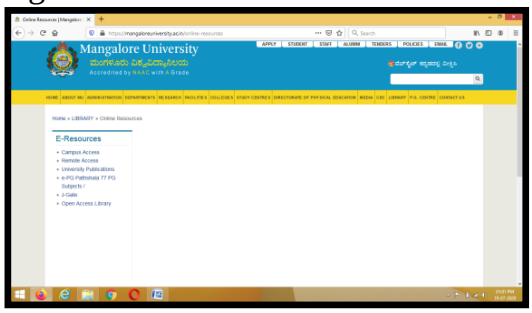
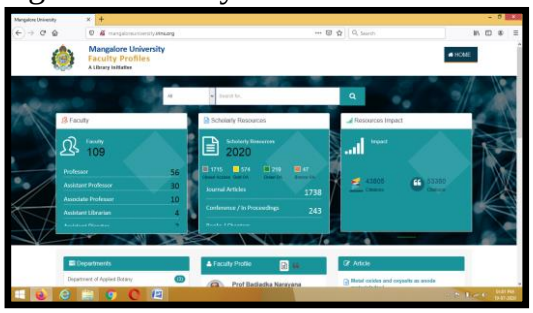


Fig 4.73: Faculty Profile



4.2.15 National Law School of India University, Bengaluru (www.nls.ac.in)

Fig 4.74: Home page

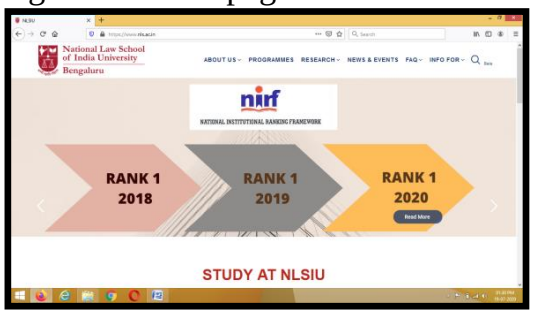

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Fig 4.75: Library

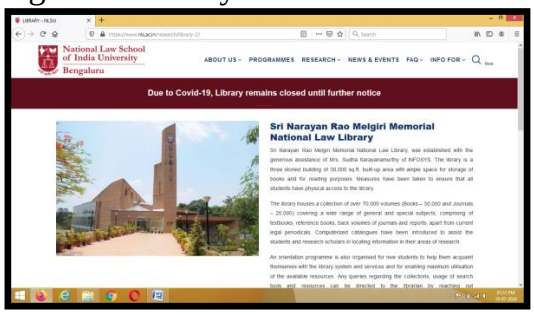

National Law School of India University Bengaluru
ABOUT US PROGRAMMES RESEARCH NEWS & EVENTS FAQ INFO FOR
Due to Covid-19, Library remains closed until further notice
Sri Narayan Rao Melgiri Memorial National Law Library

Fig 4.76: OPAC

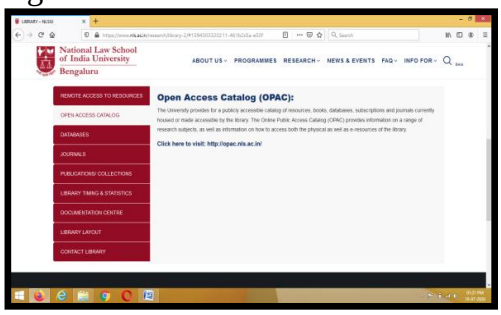


Fig 4 77: Remote access to E-resources

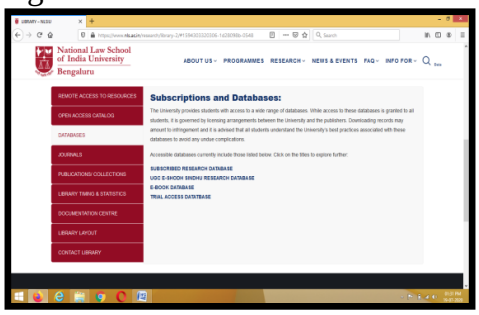


Fig 4.78: Access to E-journals

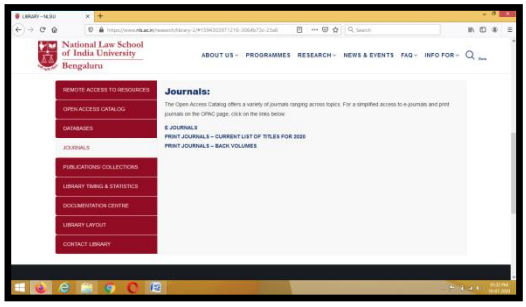
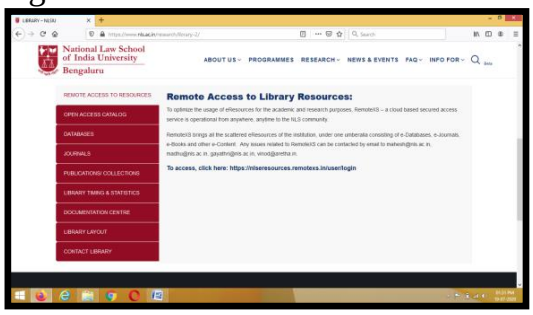


Fig 4.79: Remote access



4.2.16 Rajiv Gandhi University of Health Sciences, Bengaluru (www.rguhs.ac.in)

Fig 4.80: Home page

Fig 4.81: Digital Library

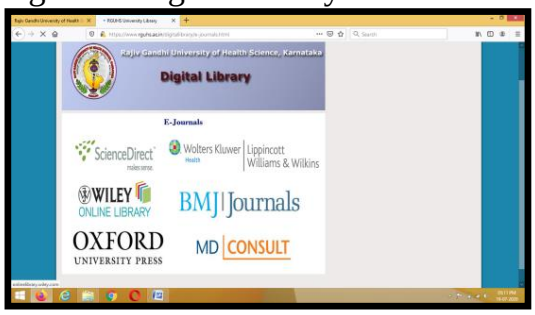


Fig 4.82: E- Resources

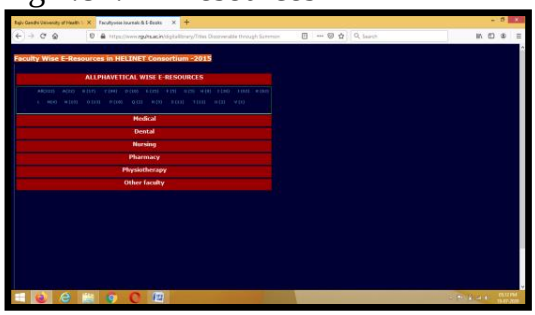


Fig 4.83: Digital library services

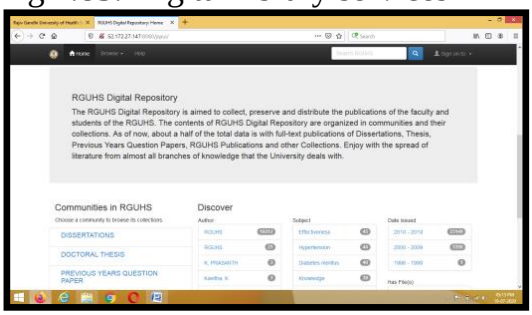

RGUHS Digital Repository
The RGUHS Digital Repository is aimed to collect, preserve and distribute the publications of the faculty and students of the RGUHS. The contents of RGUHS Digital Repository are organized in communities and their collections. As of now, about a half of the total data is with full-text publications of Dissertations, Thesis, Previous Years Question Papers, RGUHS Publications and other Collections. Enjoy with the spread of literature from almost all branches of knowledge that the University deals with.
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Fig 4.84: Access to Helinet gateways

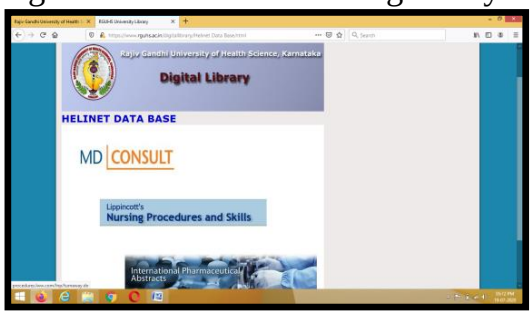


Fig 4.85: Access to E-theses

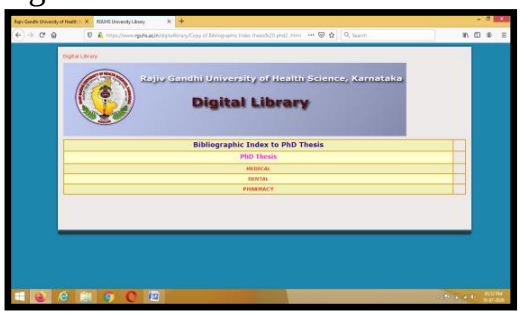


Fig 4.86: Access to E-books

Fig 4.87: Open Access Resources

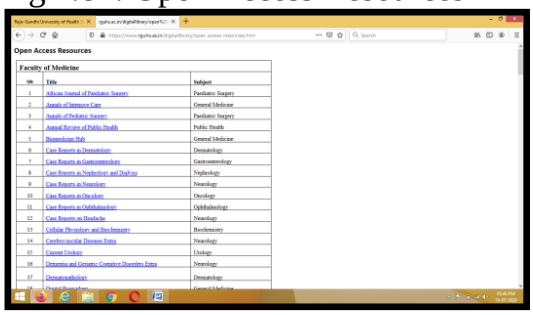
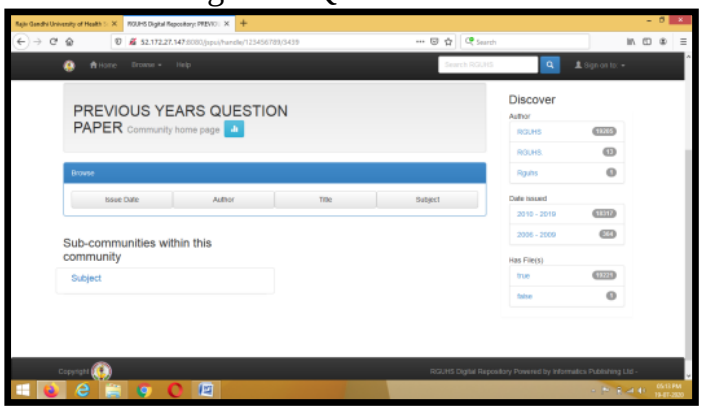


Fig 4.88: Question Bank



4.2.17 Rani Channamma University, Belagavi (www.rcub.ac.in)

Fig 4.89: Home page

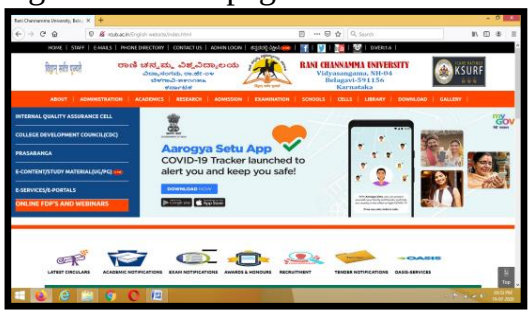


Fig 4.90: Library

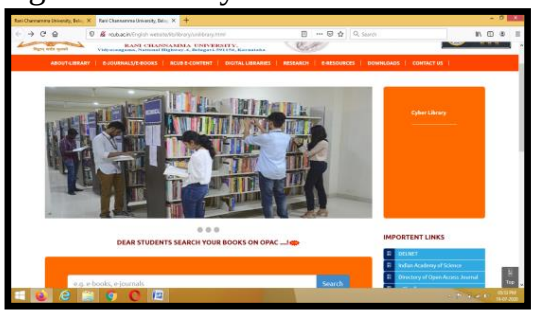


Fig 4.91: OPAC

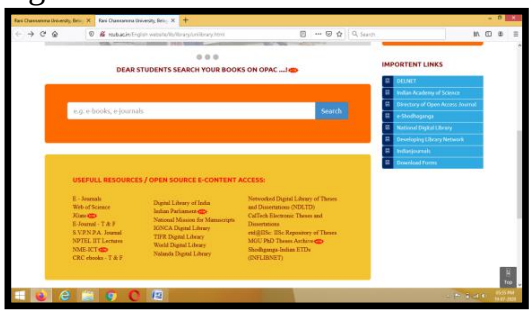


Fig 4.92: E - Resources

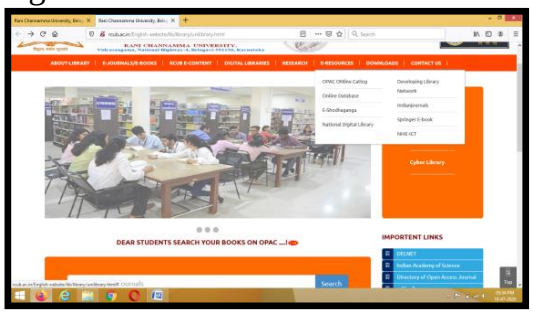


Fig 4.93: Access to E-Books/E-journals

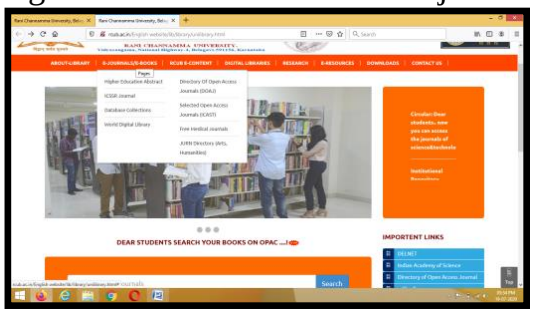


Fig4. 94: Link to Digital Libraries

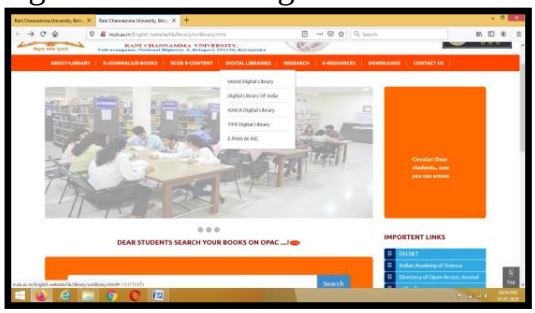
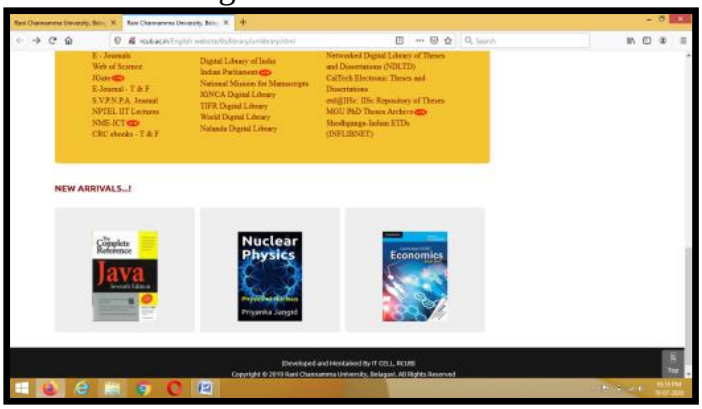


Fig 4.95: New Arrivals



4.2.18 Tumkur University, Tumakur (www.tumkuruniversity.ac.in)

Fig 4.96: Home page

Fig 4. 97: Library

Fig 4.98: Link to e-resources

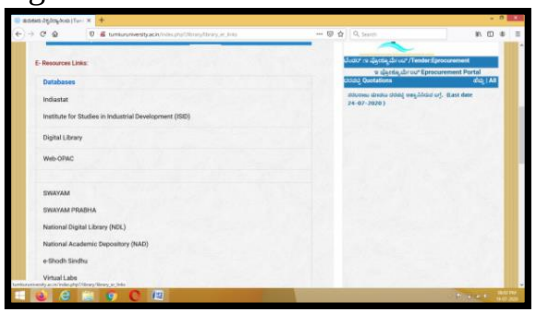
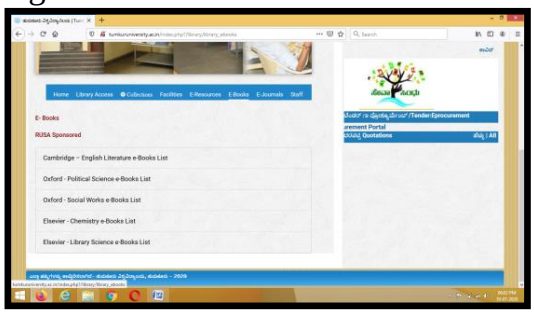


Fig 4.99: Link to e-books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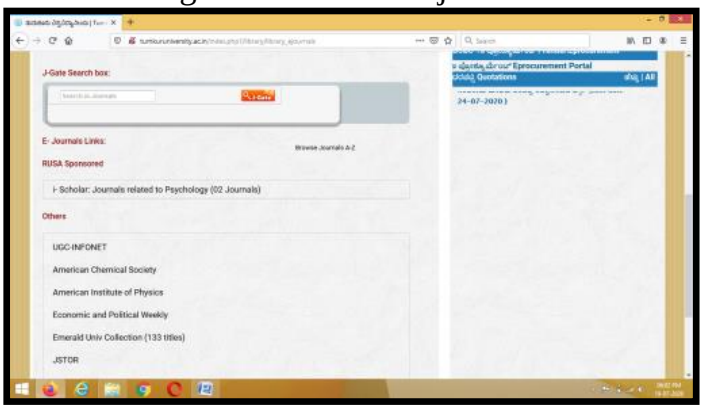
Oxford - Political Science e-Books List
Oxford - Social Works e-Books List
Elsevier - Chemistry e-Books List
Elsevier - Library Science e-Books List

Fig 4.100: Link to e-journals



4.2.19 University of Mysore, Mysuru (www.uni-mysore.ac.in)

Fig 4.101: Home page

Fig 4.102: Library

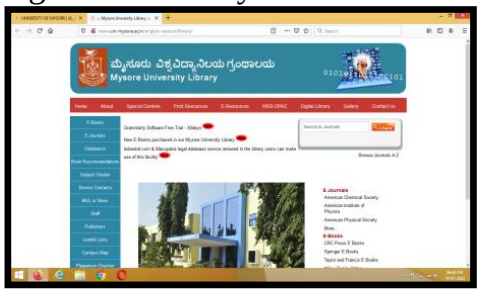


Fig 4.103: OPAC

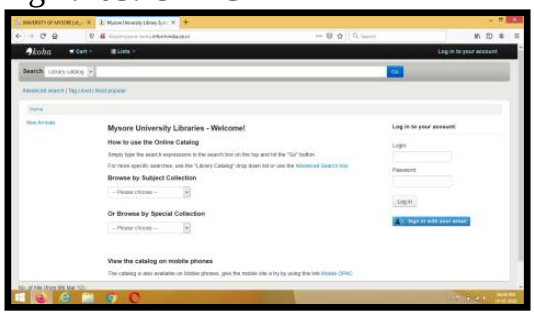

Mysore University Libraries - Welcome!
How to use the Online Catalog
Browse by Subject Collection
Or Browse by Special Collection
View the catalog on mobile phones

Fig 4.104: Open Access Resources

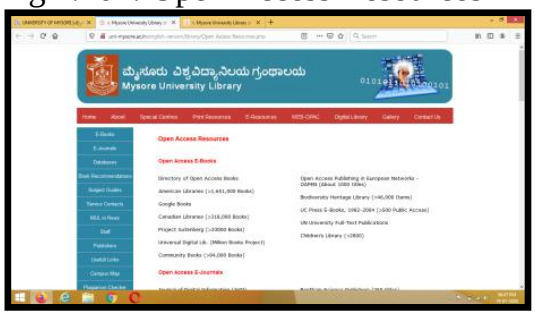


Fig 4.105: Subject Guides

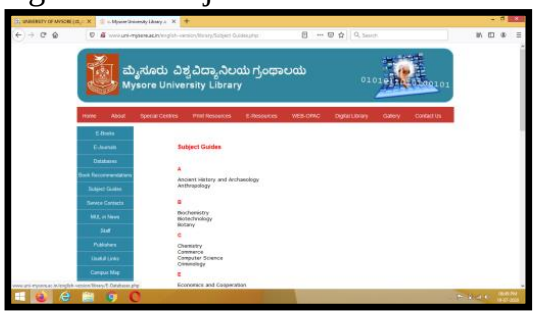


Fig 4.106: E prints repository

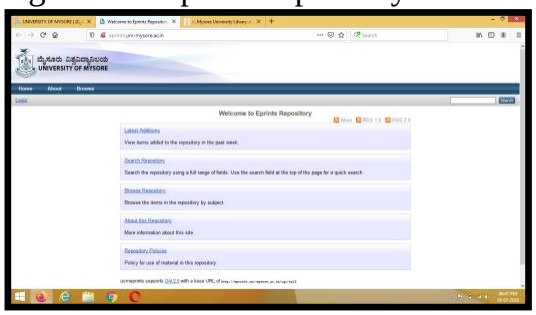


Fig 4.107: Campus-wide access

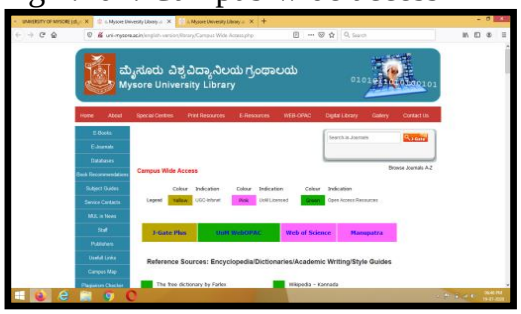


Fig 4.108: Access to off campus resources

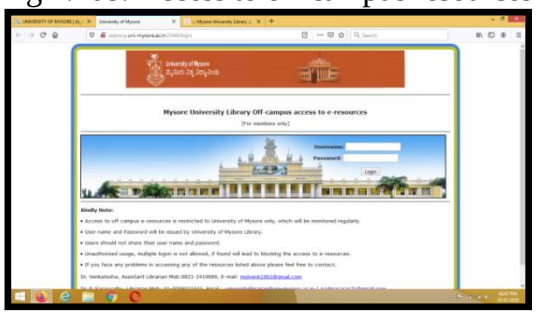
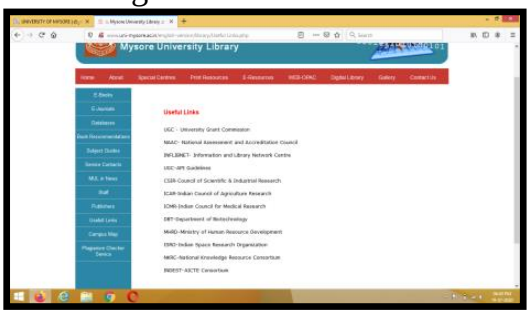


Fig 4.109: Useful links



4.2.20 Vijayanagar Shri Krishnadevaraya University, Ballari (www.vskub.ac.in)

Fig 4.110: Home page

Fig 4.111: Library

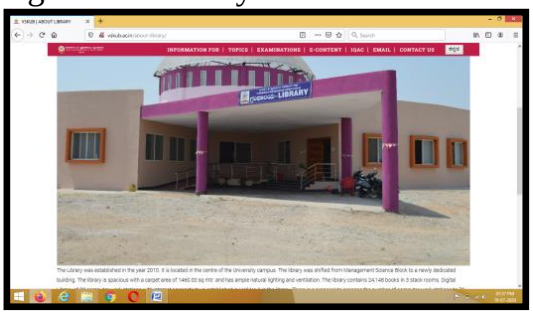
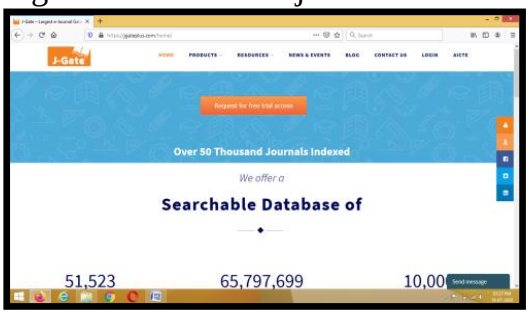


Fig 4.112: Access to journal database



4.2.21 Visvesvaraya Technological University, Belagavi (www.vtu.ac.in)

Fig 4.113: Home page

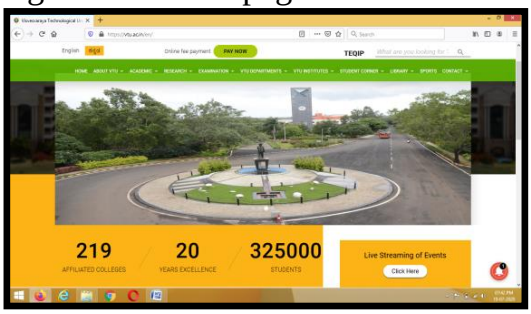


Fig 4.114: OPAC

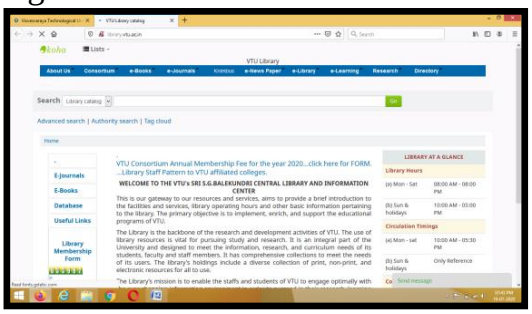


Fig 4.115: Institutional Repository

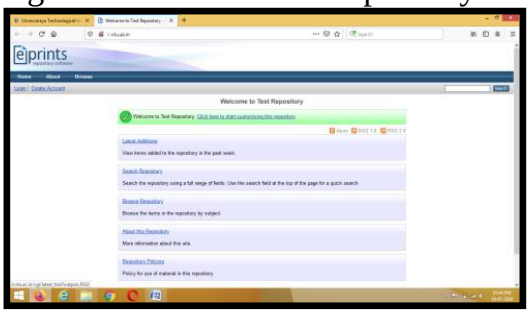
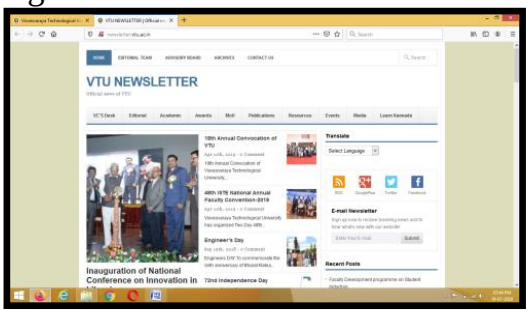


Fig 4.116: Newsletter



4.2.22 University of Agricultural Sciences, Bengaluru (www.uasbangalore.edu.in)

Fig 4.117: Home page

Fig 4.118: Library

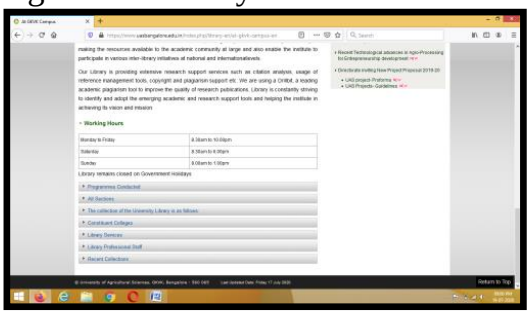


Fig 4.119:Online Resources

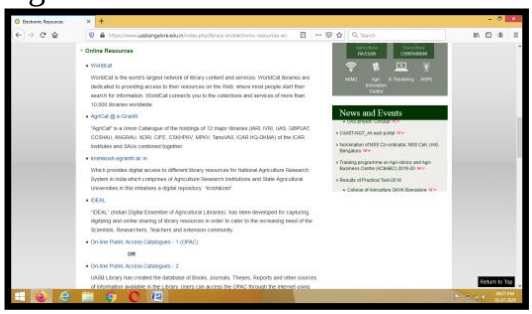


Fig 4.120: Access to E-Resources

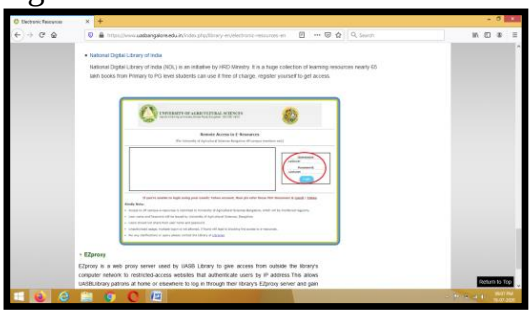
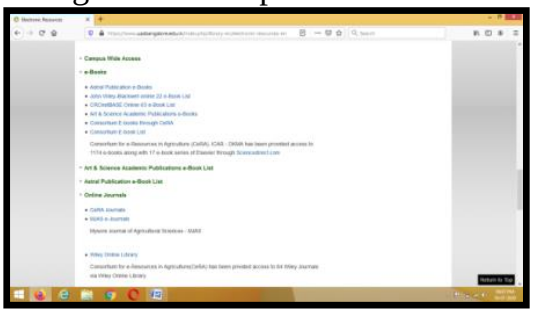


Fig 4.121: Campus-wide access



4.2.23 University of Agricultural Sciences, Dharwad (www.uasd.edu)

Fig 4.122: Home page

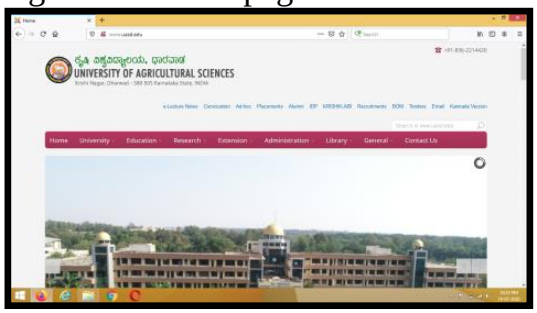


Fig 4.123: Library service

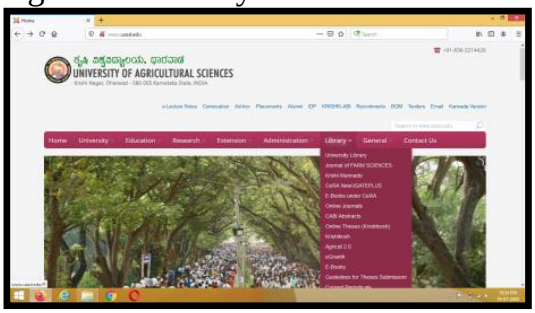


Fig 4.124: Access to Krishikosh

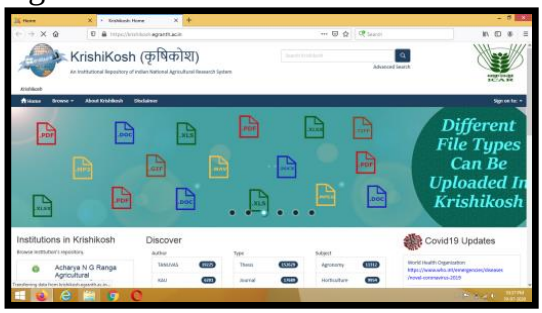


Fig 4.125: Access to AgriStat

IndiaAgristat
DISTRICT FACTBOOK
India ranks second worldwide in farm output. Agriculture sector accounts 13.7% of the GDP.
ESTIMATED POPULATION
SOCIO-ECONOMIC NEWS
SOCIO-ECONOMIC STATISTICAL INFORMATION ABOUT AGRICULTURE IN INDIA
KEY ECONOMIC INDICATORS OF INDIA

Fig 4.126: Access to CABI

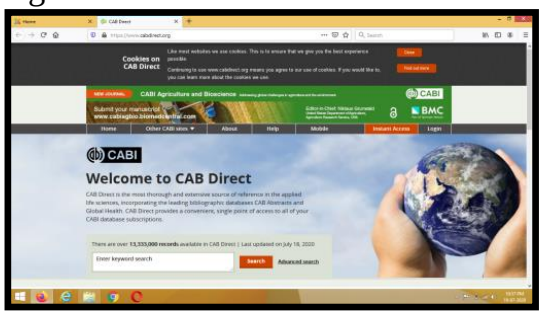


Fig 4.127: Link to e-books under CeRA

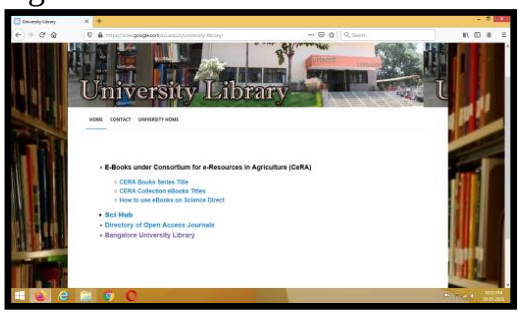

University Library
E-Books under Consortium for e-Resources in Agriculture (CeRA)
CERA Books Series Title
CERA Collection eBooks Titles
How to use eBooks on Science Direct
Sci Hub
Directory of Open Access Journals
Bangalore University Library

Fig 4.128: Link to E-Books

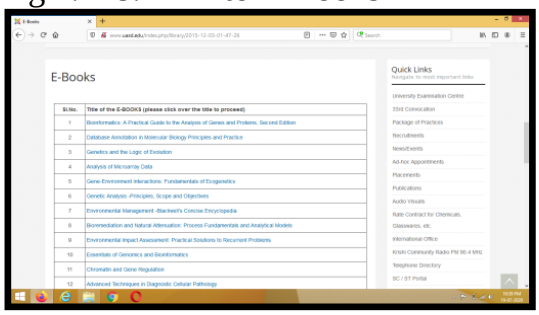


Fig 4.129: Access to online journals

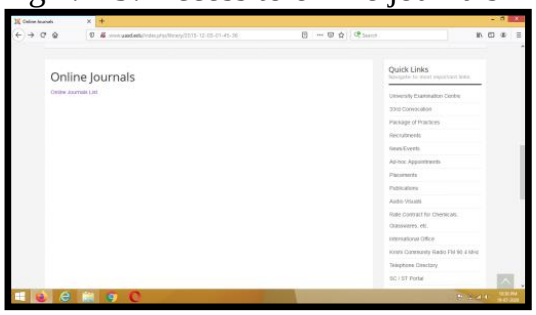
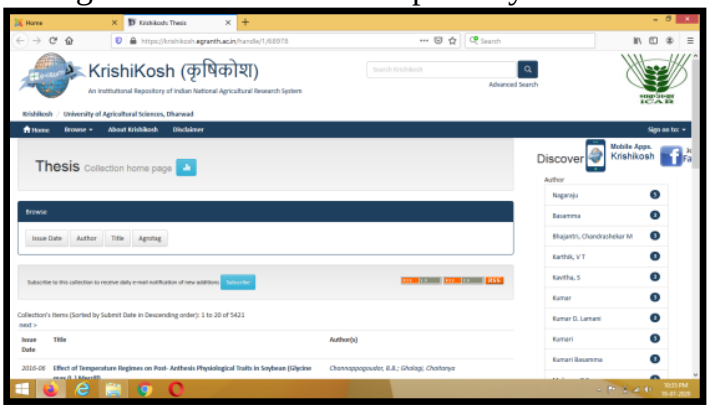


Fig 4.130: Institutional Repository of theses


KrishiKosh (कृषिकोश)
An Institutional Repository of Indian National Agricultural Research System
Thesis Collection home page
Discover

4.2.24 University of Agricultural Sciences, Raichur (www.uasraichur.edu.in)

Fig 4.131: Homepage

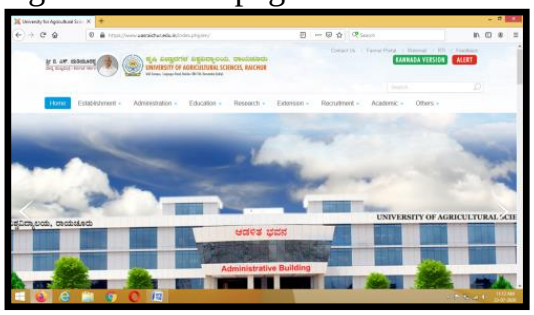
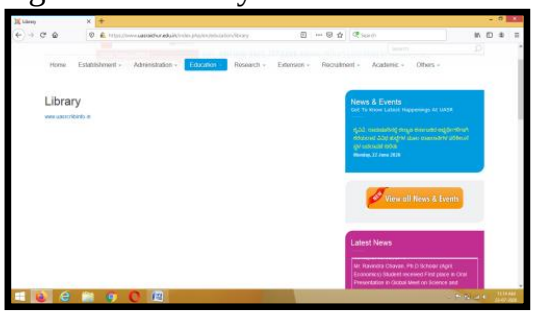


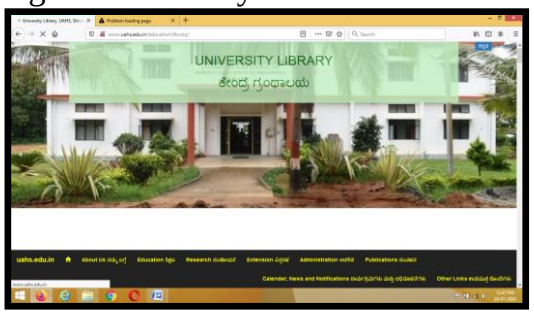
Fig 4.132: Library



4.2.25 University of Agricultural and Horticultural Sciences, Shivamogga (www.uahs.edu.in)

Fig 4.133: Homepage

Fig 4.134: Library



4.2.26 University of Horticultural Sciences, Bagalkot (www.uhsbagalkot.edu.in)

Fig 4.135: Homepage

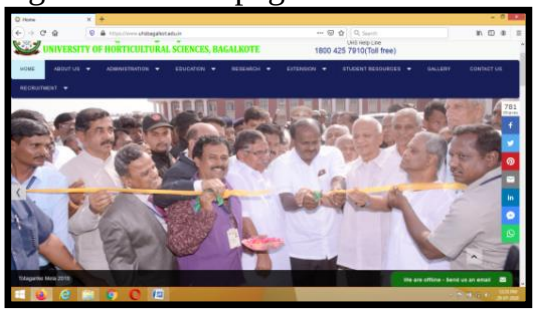


Fig 4.136: OPAC

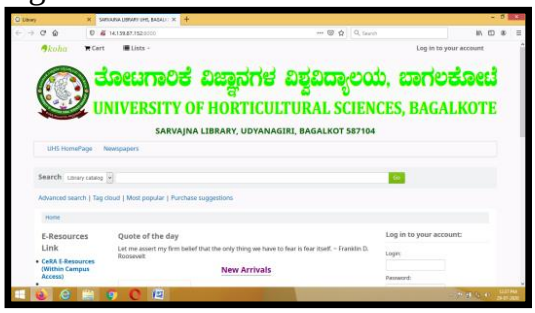


Fig 4.137: Sarvagna Library

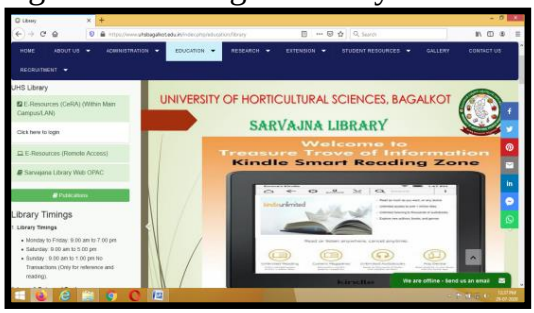
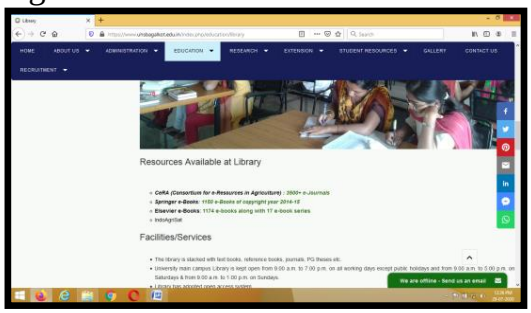


Fig 4.138: Resources



4.2.27 Indian Institute of Science, Bangaluru (www.library.iisc.ac.in)

Fig 4.139: Home page

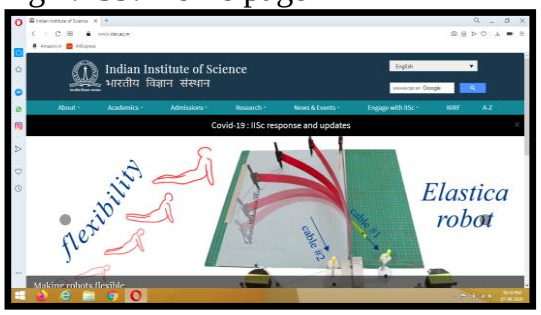


Fig 4.140: Library homepage

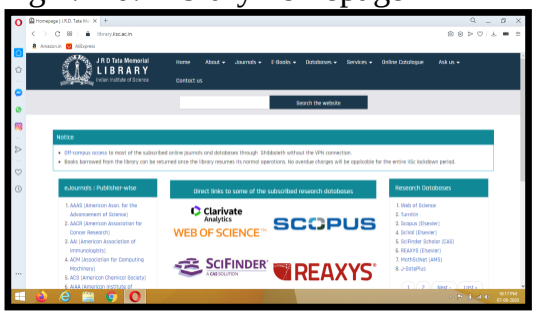


Fig 4.141: Library collection

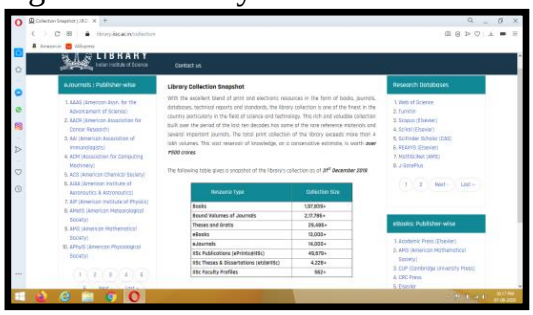


Fig 4.142: Services

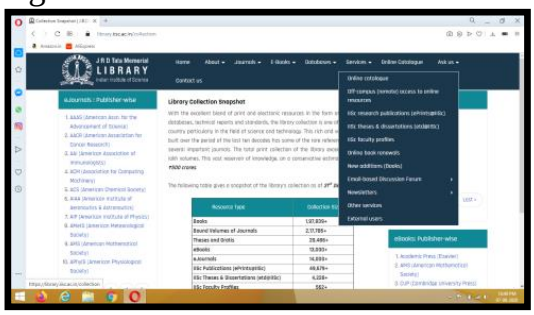


Fig 4.143: OPAC

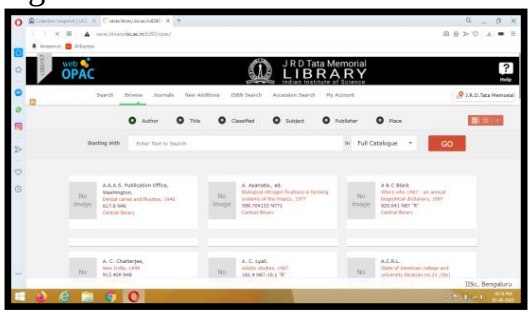


Fig 4.144: Off-campus Access to Resources

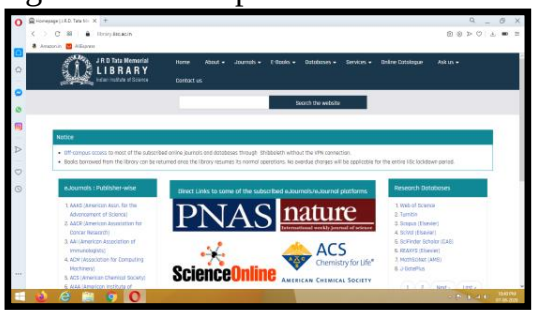


Fig 4.145: Access to E-Resources

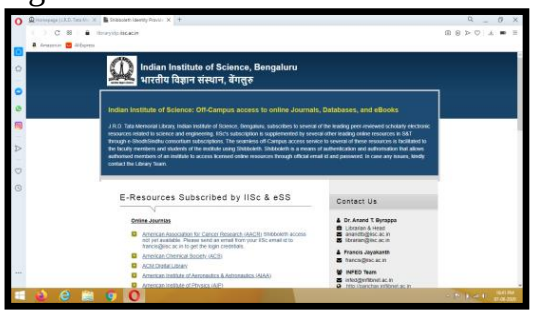

Indian Institute of Science, Bengaluru
भारतीय विज्ञान संस्थान, बेंगलुरु
Indian Institute of Science: Off-Campus access to online Journals, Databases, and eBooks
E-Resources Subscribed by IISc & eSS
Contact Us

Fig 4.146: Access to E-Books

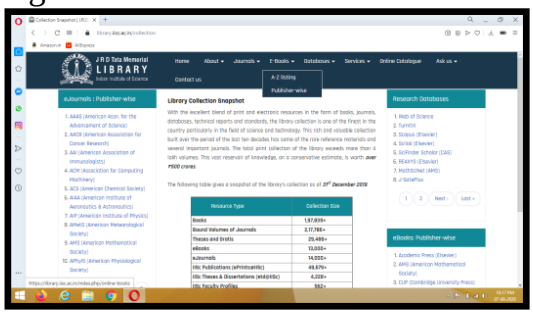


Fig 4.147: Access to E-Journals

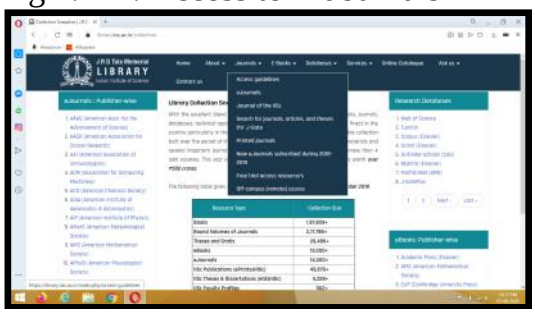
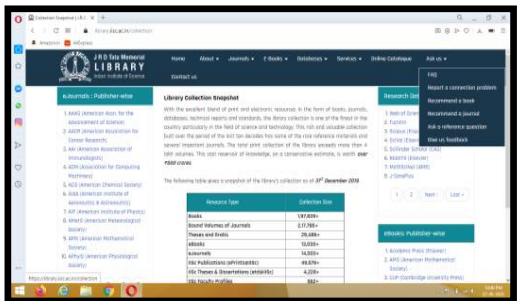


Fig 4.148: Ask us



4.2.28 International Institute of Information Technology, Bengaluru (www.iiitb.ac.in)

Fig 4.149: Home page

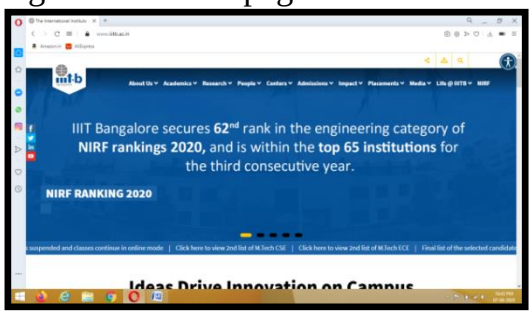

IIIT Bangalore secures 62nd rank in the engineering category of NIRF rankings 2020, and is within the top 65 institutions for the third consecutive year.
NIRF RANKING 2020

Fig 4.150: OPAC

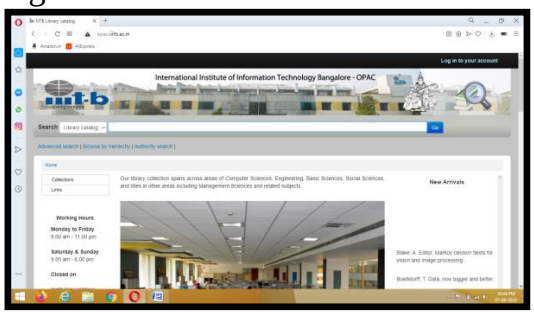


Fig 4.151: Library collection

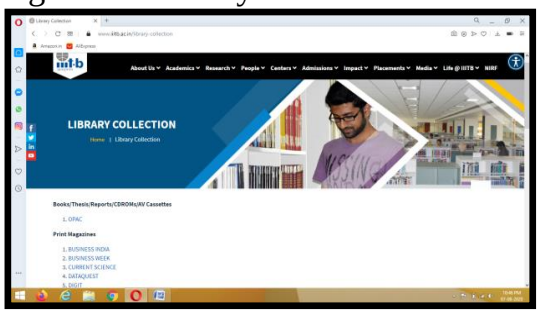
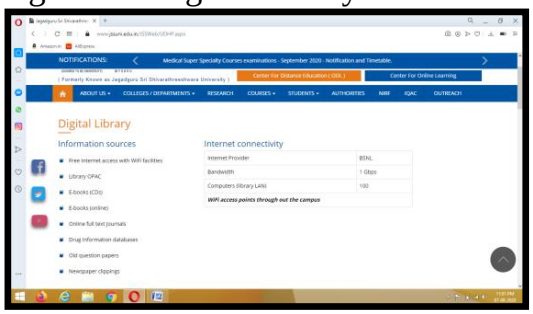


Fig 4.152: Digital Library



4.2.29 BLDE University, Vijayapura (www.bldedu.ac.in)

Fig 4.153: Homepage

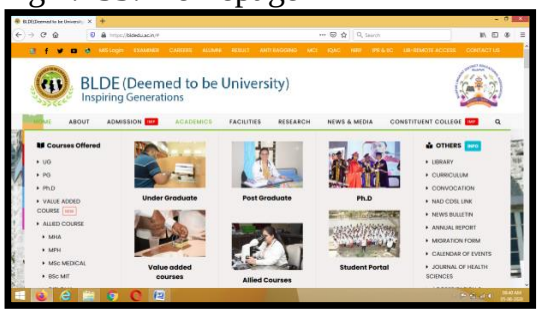


Fig 4.154: Library service

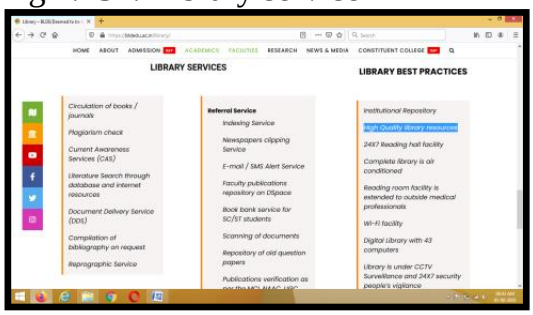


Fig 4.155: Remote Access to resources

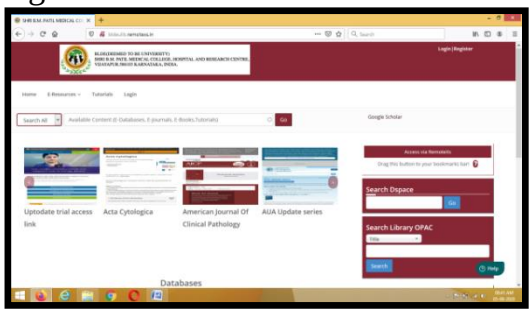
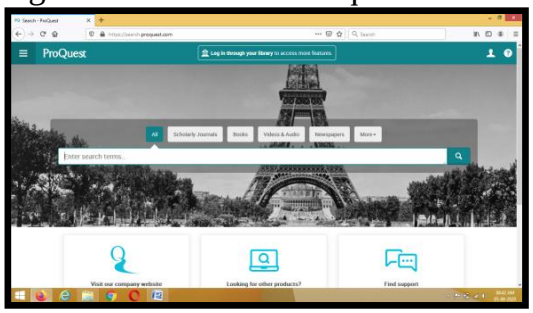


Fig 4.156: Access to Proquest



4.2.30 PES University, Bengaluru (www.pes.edu)

Fig 4.157: Home page

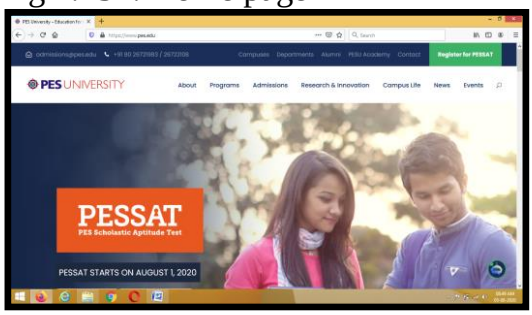


Fig 4.158: Library home page

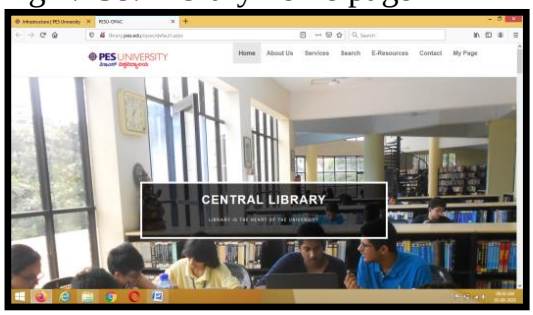


Fig 4.159: OPAC

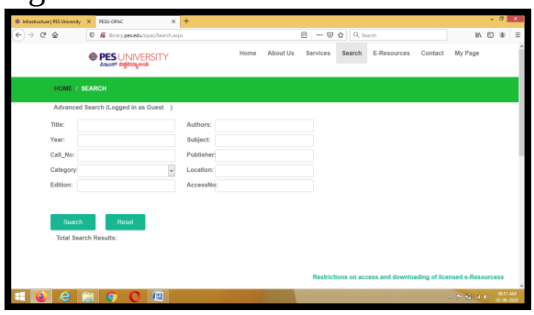


Fig 4.160: Ask –a - Librarian

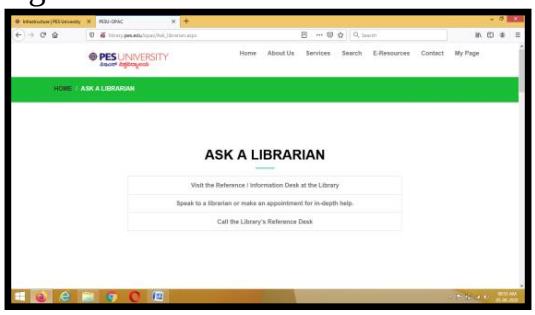


Fig 4.161: E-books

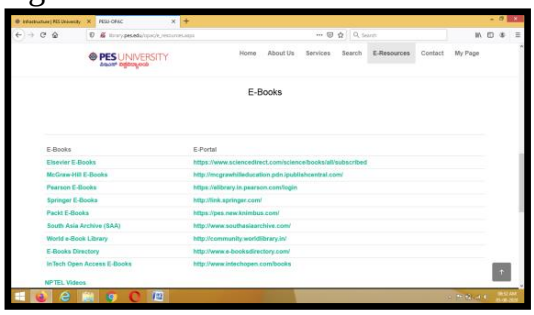


Fig 4.162: E-Resources

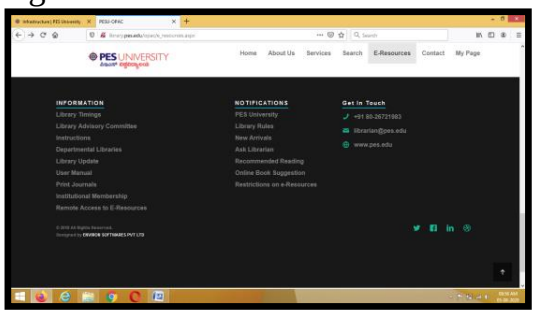


Fig 4.163: E-journals

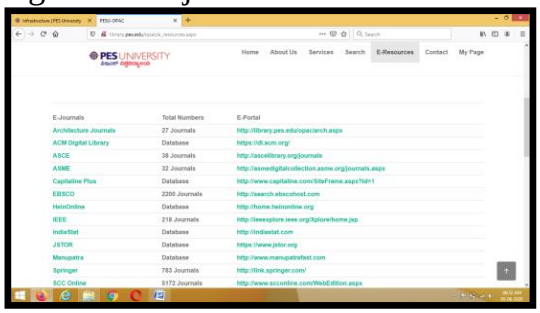


Fig 4.164: Library update

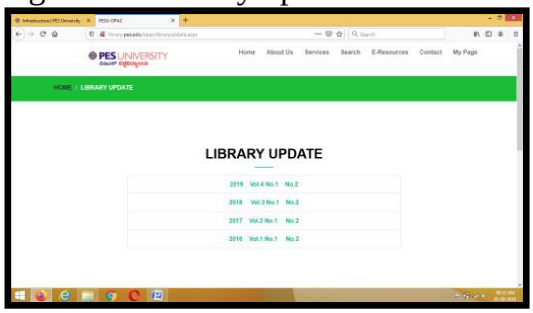


Fig 4.165: Off-campus access

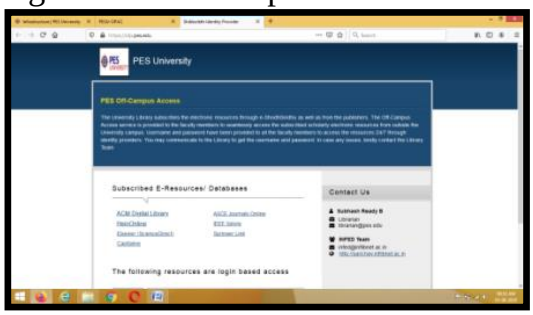
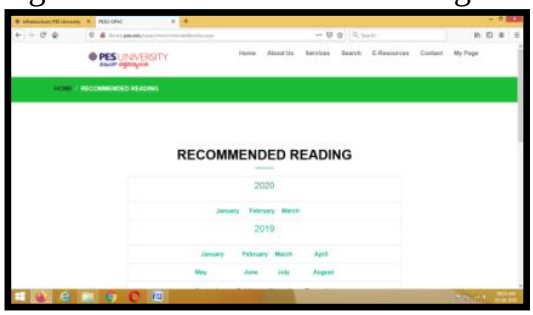


Fig 4.166: Recommended reading



4.2.31 Christ University, Bengaluru (www.christuniversity.in)

Fig 4.167: Homepage

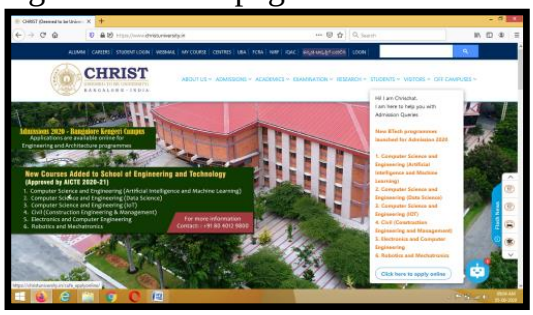


Fig 4.168: Library homepage

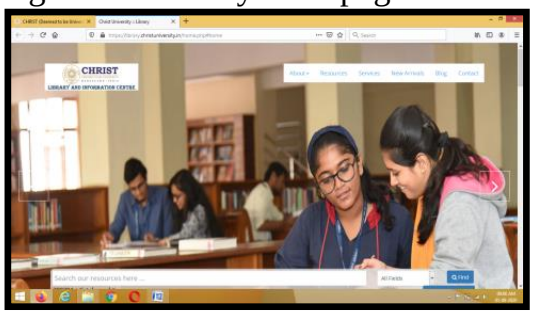


Fig 4.169: Library resources

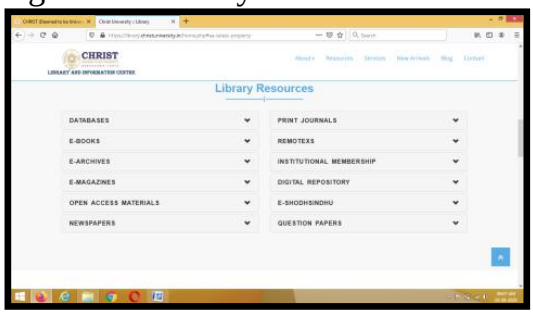


Fig 4.170: Library services

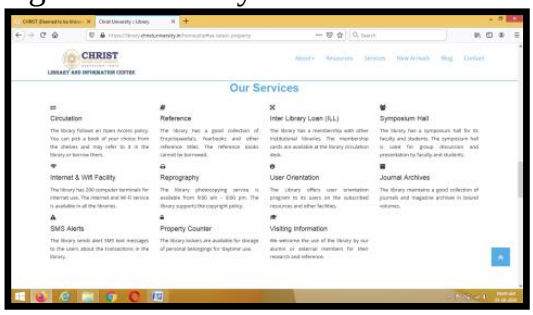


Fig 4.171: E-books

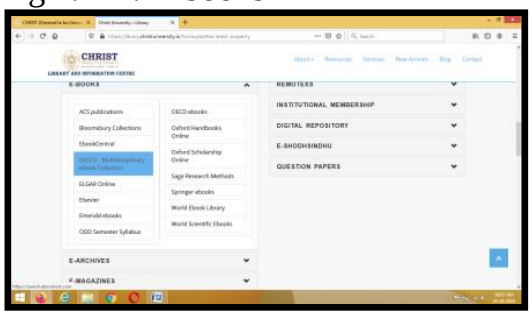


Fig 4.172: OPAC

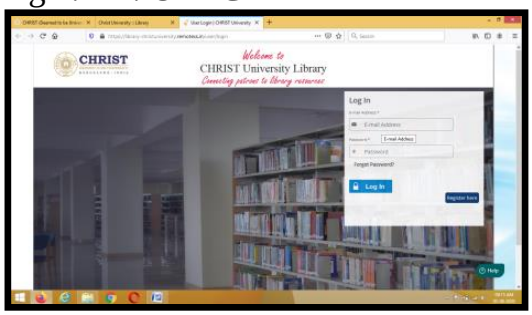


Fig 4.173: Databases

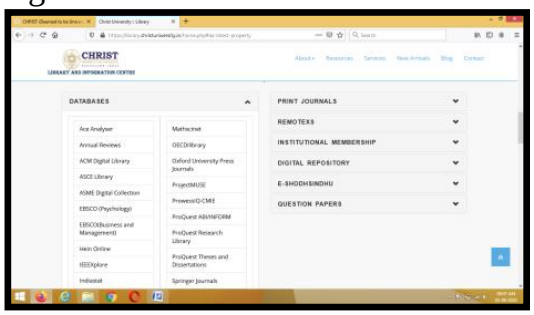


Fig 4.174: Blog

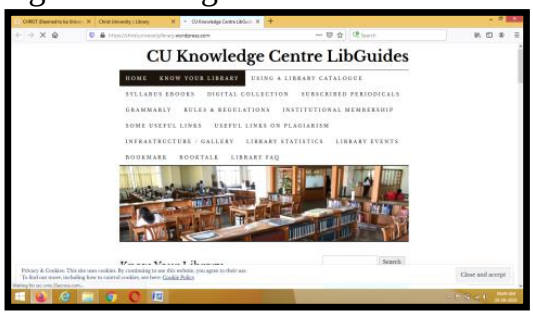


Fig 4.175: Open Access Resources

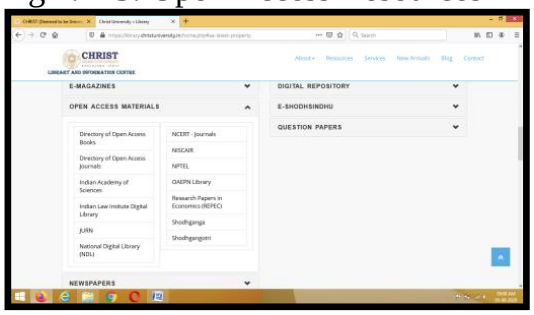
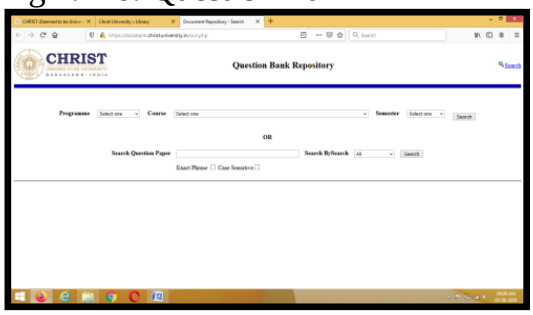


Fig 4.176: Question Bank



4.2.32 JSS Academy of Higher Education and Research, Mysuru (www.jssuni.edu.in)

Fig 4.177: Homepage

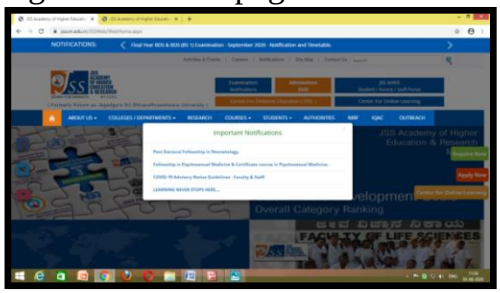
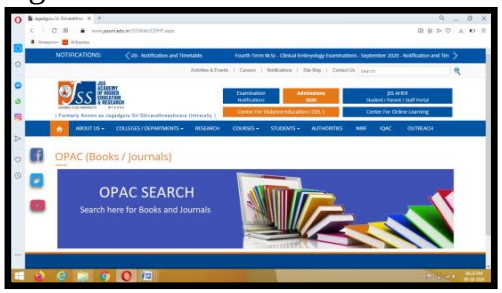
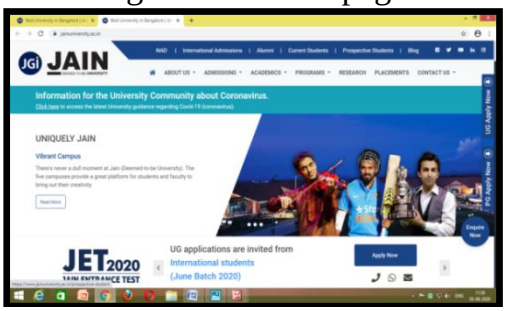


Fig 4.178: OPAC



4.2.33 Jain University, Bengaluru (www.jainuniversity.ac.in)

Fig 4.179: Home page



4.2.34 Jawaharlal Nehru Centre for Advanced Scientific Research, Bengaluru (www.jncasr.ac.in)

Fig 4.180: Home page

Fig 4.181: Library OPAC

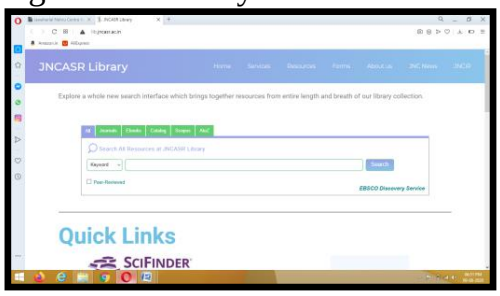


Fig 4.182: Quick links

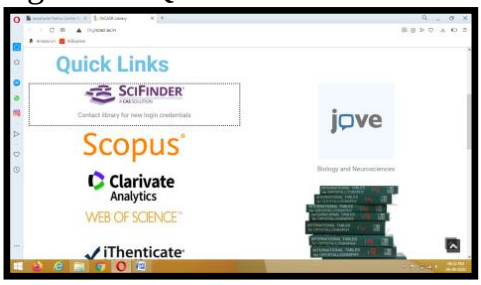
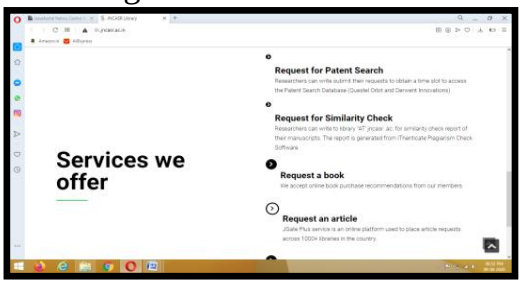


Fig 4.183: Services



4.2.35 KLE Academy of Higher Education and Research, Belagavi (www.kledeemeduniversity.edu.in)

Fig 4.184: Home page

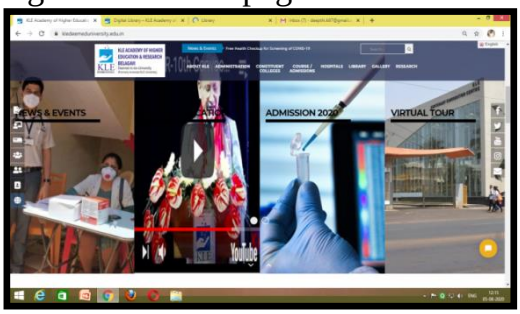


Fig 4.185: Digital Library

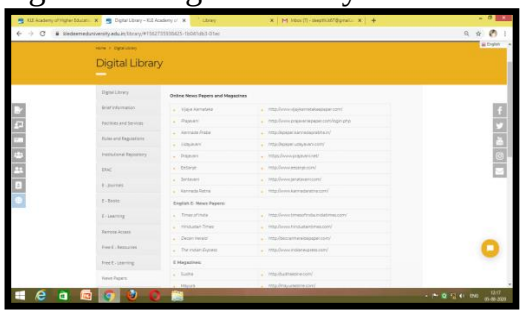


Fig 4.186: Digital Library

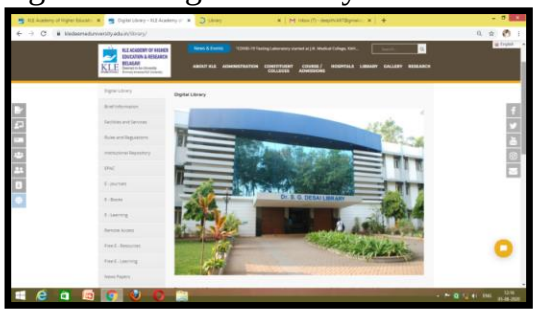


Fig 4.187: Library Facilities & Services

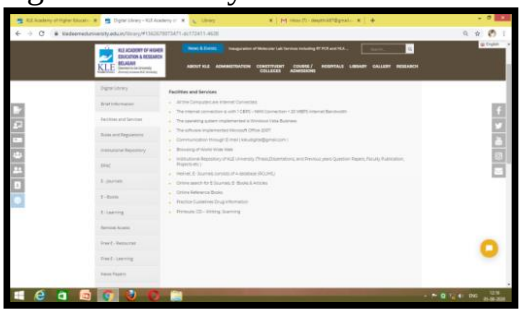


Fig 4.188: Institutional Repository

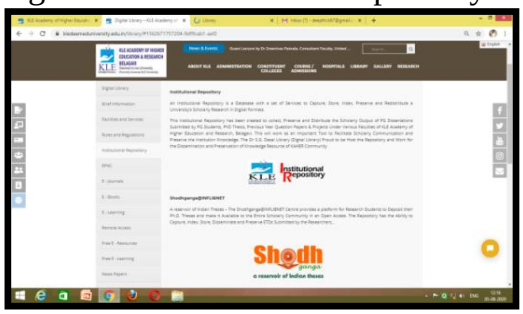


Fig 4.189:E-Journals

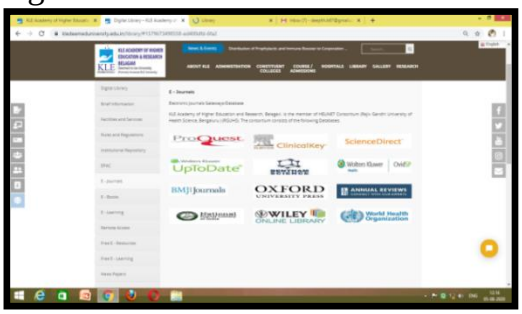


Fig 4.190: Remote Access

4.2.36 Manipal Academy of Higher Education, Manipal (www.manipal.edu)

Fig 4.191: Home page

Fig 4.192: MAHE: Major Libraries

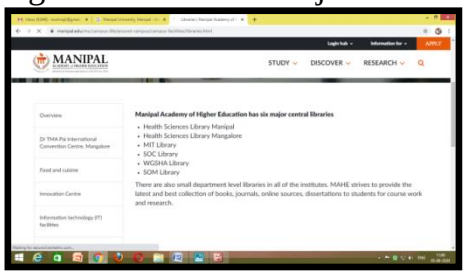

MANIPAL
STUDY
DISCOVER
RESEARCH
Manipal Academy of Higher Education has six major central libraries
Health Sciences Library Manipal
Health Sciences Library Mangalore
MIT Library
SOC Library
WGSHA Library
SOM Library
There are also small department level libraries in all of the institutes. MAHE strives to provide the latest and best collection of books, journals, online sources, dissertations to students for course work and research.

Fig 4.193: MAHE: KMC Library

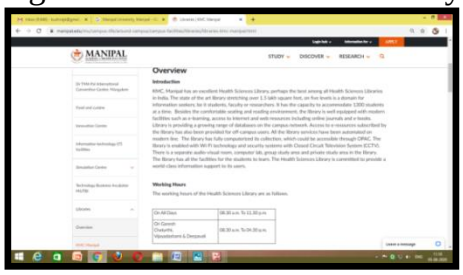


Fig 4.194: MAHE: KMC Library E-Resources

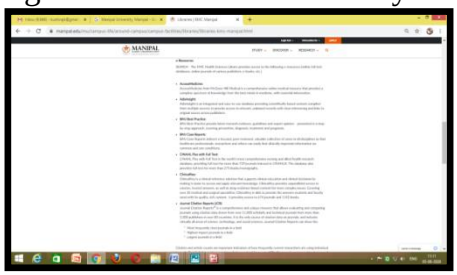


Fig 4.195: KMC Library Services

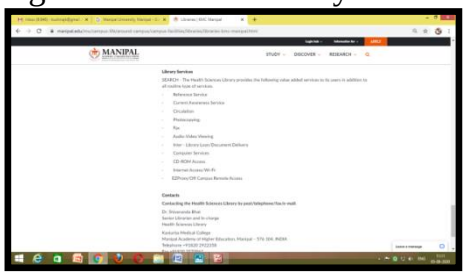


Fig 4.196: MAHE: KMC Library, Mangalore

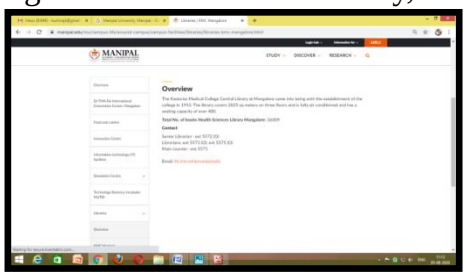


Fig 4.197: MAHE: SOC Library

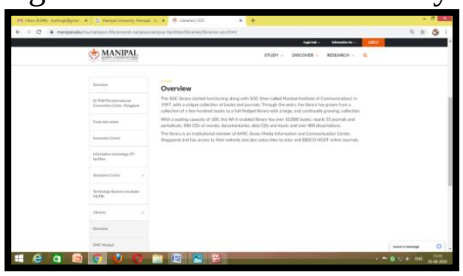


Fig 4.198: MAHE: WGSHA Library

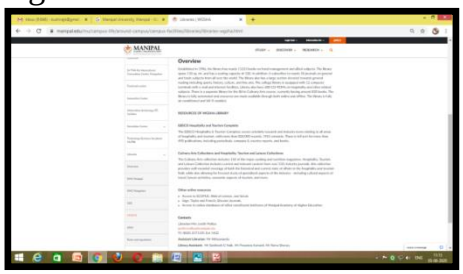
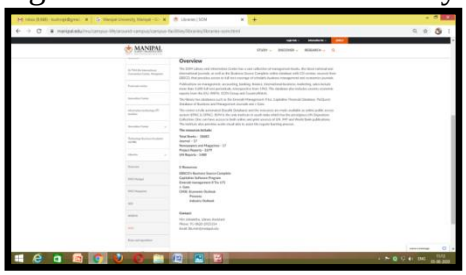


Fig 4.199: MAHE: SOM Library



4.2.37 NITTTE University, Mangalore (www.nmamit.nitte.edu.in)

Fig 4.200: Home page

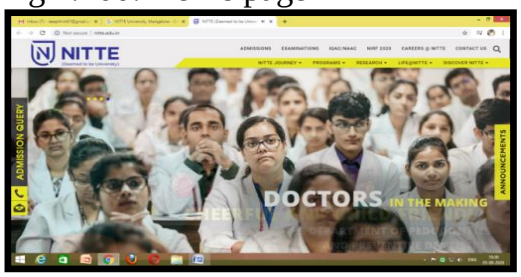
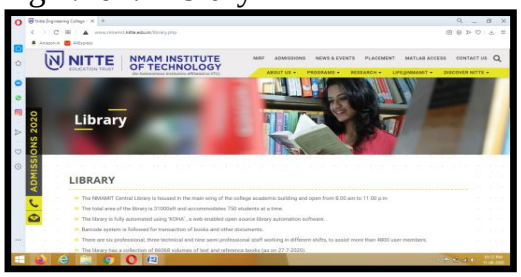


Fig 4.201: Library



4.2.38 Sri Devraj Urs Academy of Higher Education and Research, Kolar (www.sduu.ac.in)

Fig 4.202: Home page

Fig 4.203: Library

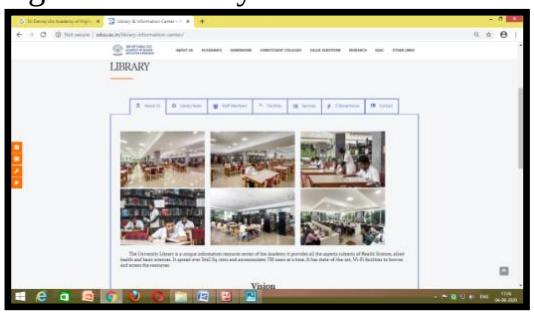


Fig 4.204: Digital Library

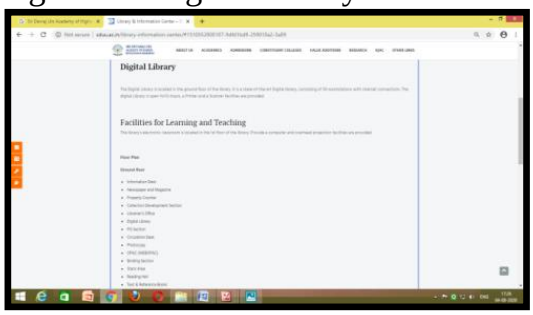


Fig 4.205: Library Services

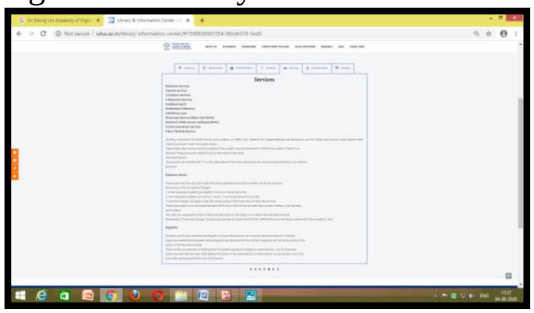
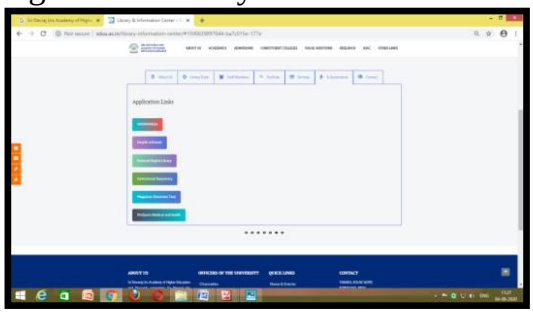


Fig 4.206: Library Links



4.2.39 Sri Siddhartha Academy of Higher Education, Tumkur (www.sahe.in)

Fig 4.207: Home page

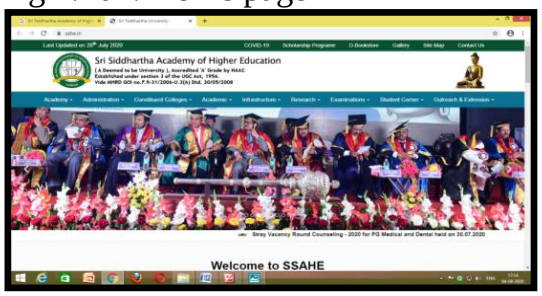
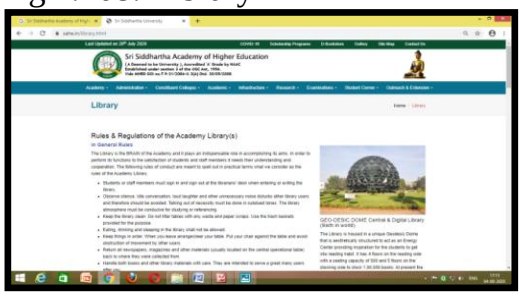
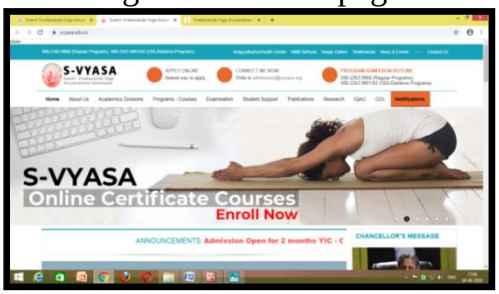


Fig 4.208: Library



4.2.40 Swami Vivekananda Yoga Anusandhana Samsthana, Bengaluru (www.svyas.edu.in)

Fig 4.209: Home page



4.2.41 Yenepoya University, Mangalore (www.yenepoya.edu.in)

Fig 4.210: Home page

Fig 4.211: Library

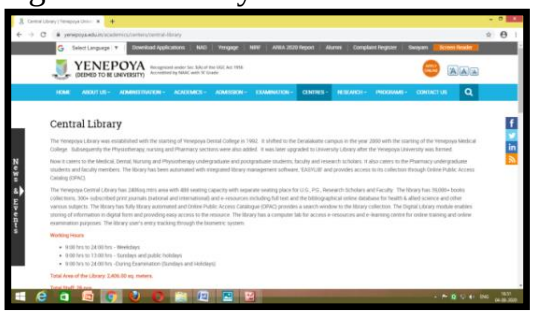


Fig 4.212:E-Resources

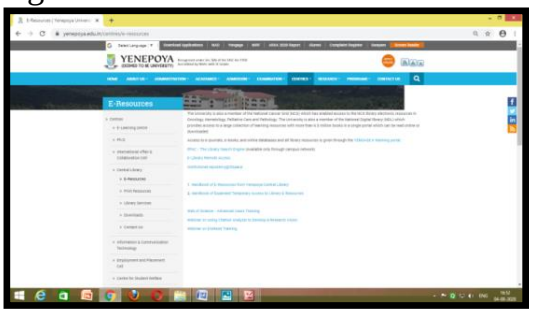
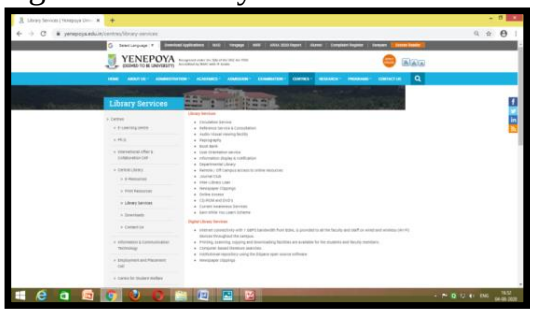


Fig 4.213: Library services



4.2.42 Alliance University, Bengaluru (www.alliance.edu.in)

Fig 4.214: Home page

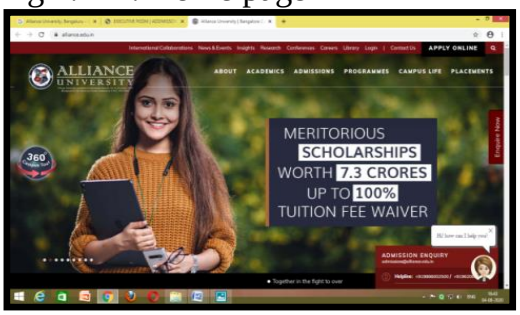
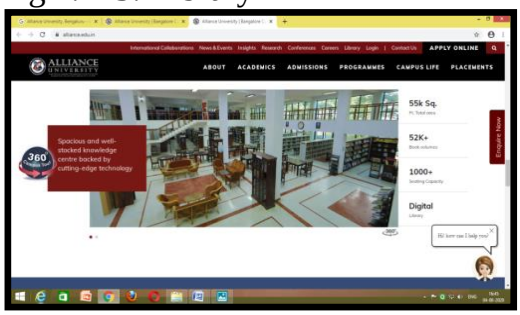


Fig 4.215: Library



4.2.43 Azim Premji University, Bengaluru (www.azimpremjiuniversity.edu.in)

Fig 4.216: Home page

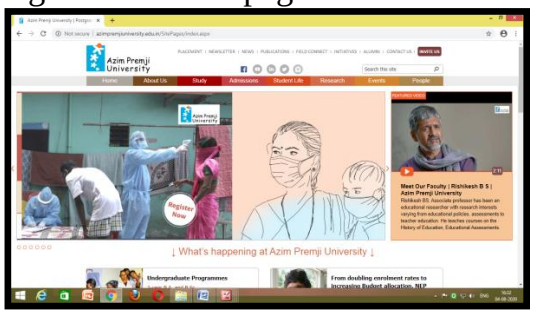


Fig 4.217: Library OPAC

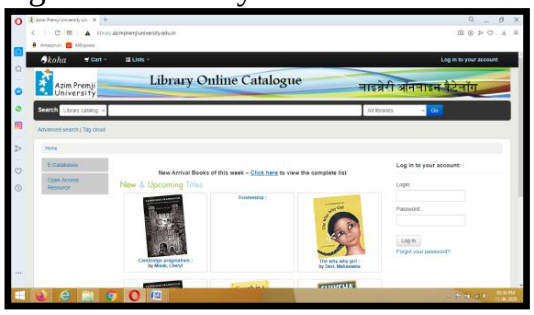


Fig 4.218: E- Databases

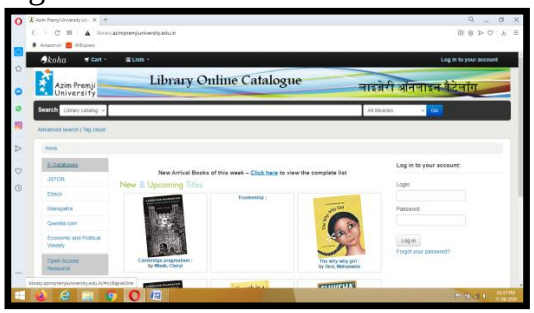
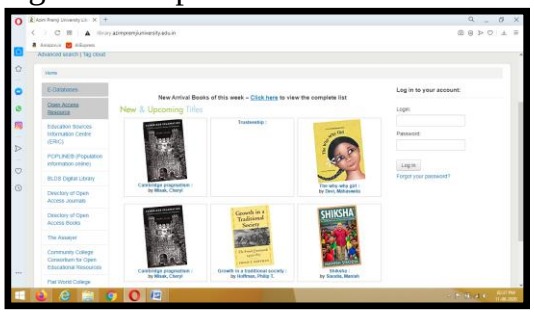
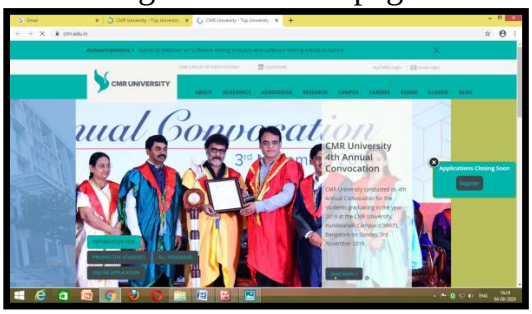


Fig 4.219: Open Access Resources



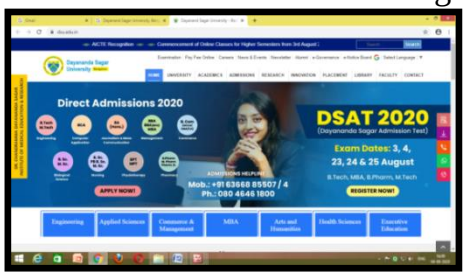
4.2.44 CMR University, Bengaluru (www.cmr.edu.in)

Fig 4.220: Home page



4.2.44 Dayanand Sagar University, Bengaluru (www.dsu.edu.in)

Fig 4.221: Homepage



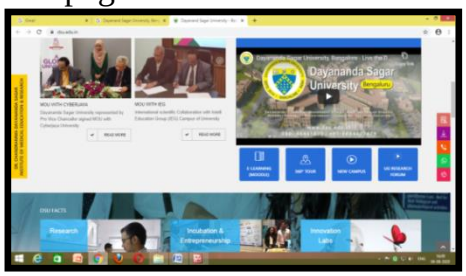


Fig 4.222: Library

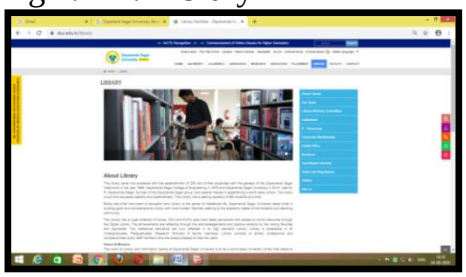


Fig 4.223: E-Resources

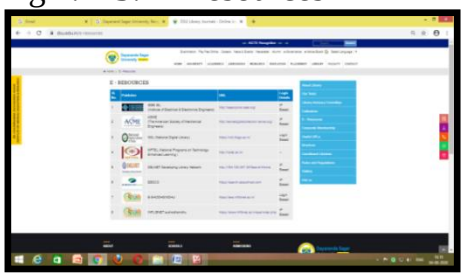


Fig 4.224: E-Journals

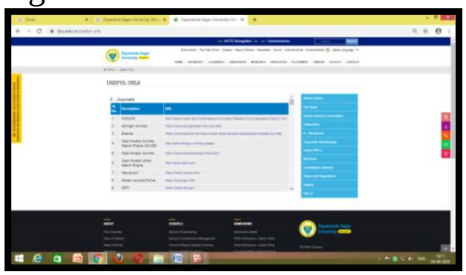
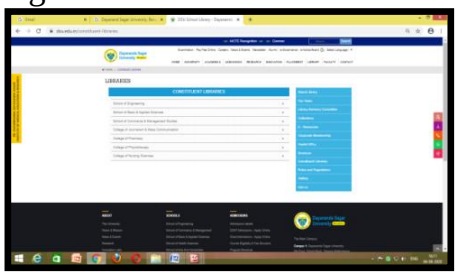


Fig 4.225: Constituent Libraries



4.2.46 Garden City University, Bengaluru (www.gardencity.university)

Fig 4.226: Home page

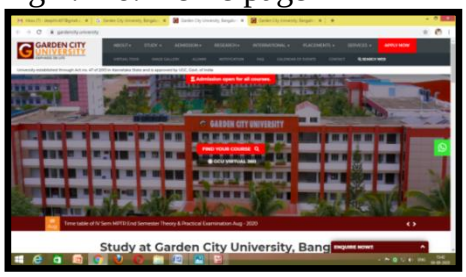


Fig 4.227: Library

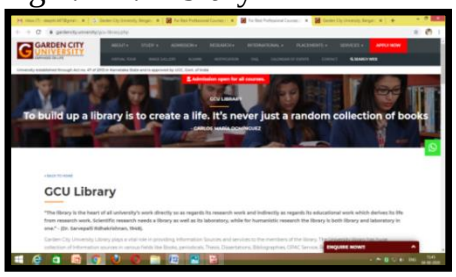
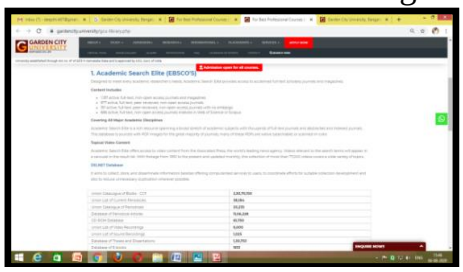
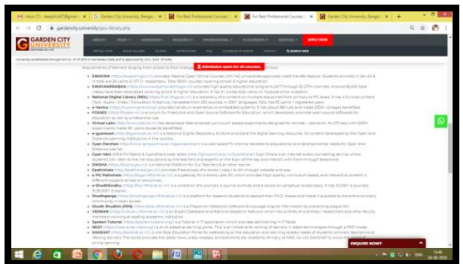


Fig 228: Online Resources





4.2.47 M S Ramaiah University of Applied Sciences, Bengaluru (www.msruas.ac.in)

Fig 4.229: Homepage

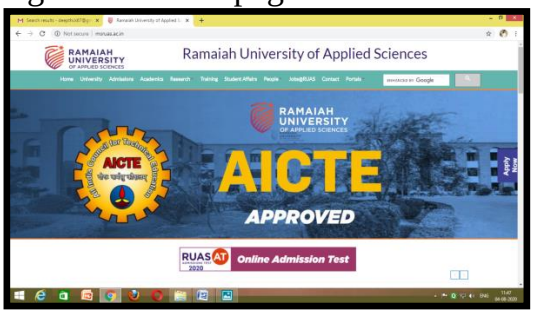
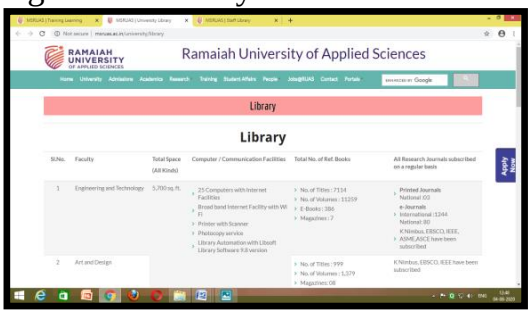


Fig 4.230: Library



4.2.48 Presidency University, Bengaluru (www.presidencyuniversity.in)

Fig 4.231: Home page

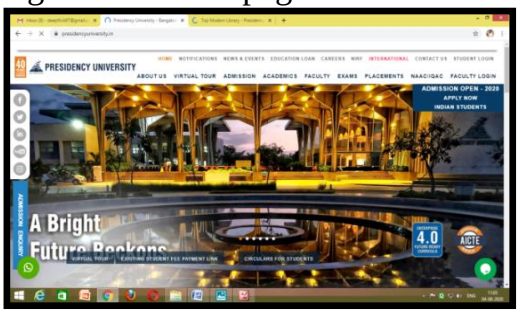


Fig 4.232: Library

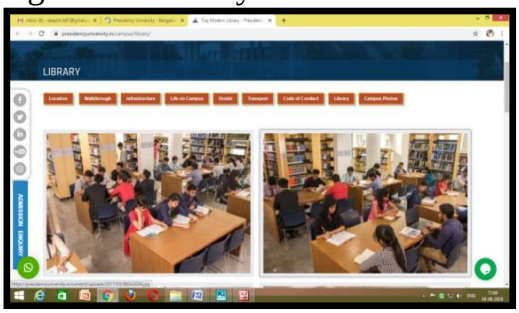
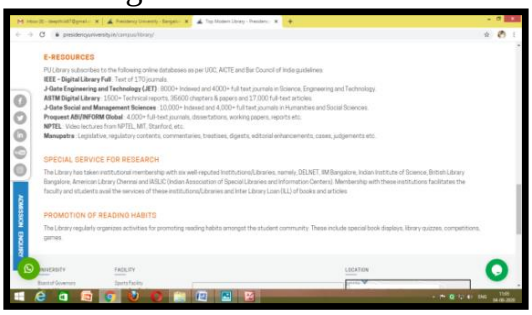
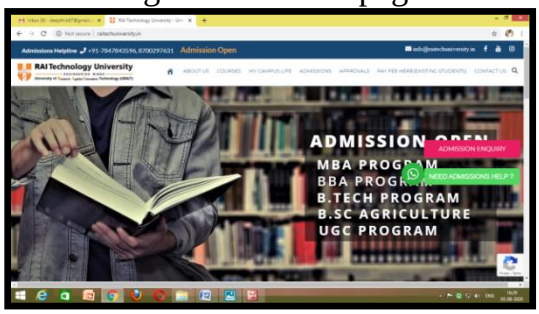


Fig 4. 233: E-Resources



4.2.49 Rai Technology University, Bengaluru (www.raitechuniversity.in)

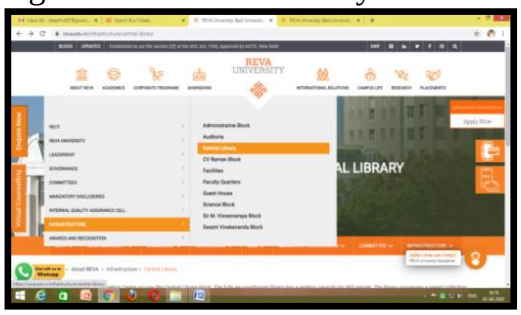
Fig 4.234: Home page



4.2.50 Reva University, Bengaluru (www.reva.edu.in)

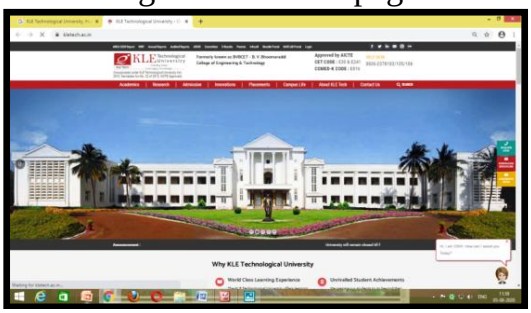
Fig 4.235: Home page

Fig 4. 236: Central Library



4.2.51 KLE Technological University, Hubballi (www.kletech.ac.in)

Fig 4.237: Home page



4.3 Conclusions:

Content analysis of the websites of the universities under study reveals that a majority of libraries have provided sufficient space to the library activities with few exceptions. A larger number of universities do not have any independent websites, but have included ‘library’ in the main menu which can be easily identified. A few have listed library under infrastructure, Facilities, Student Support Services which make the users to spend some time in locating where library is listed. It is also found from the study that few universities have static web pages and are mere descriptive in nature while some of the university libraries have well advanced beautifully designed web pages for different products and services. This will definitely help in understanding the data that has been interpreted in the next chapter.

CHAPTER-5
EVALUATION OF INFORMATION PRODUCTS AND SERVICES

5.1 Introduction:

Evaluation is a systematic determination of an entity's merit, worth and significance adopting criteria governed by a set of standards. Evaluation helps the institution to improve its programs or ascertain the degree of achievement or value, in accordance with the set guidelines to accomplish the aims and objectives of the institution. The immediate purpose of evaluation is to enable reflection and assist in the identification of future change. An attempt is made in this chapter to find out a suitable model to evaluate the information products.

5.2 Evaluation of Information Products and services:

Evaluation of information products and services has gained importance because of the fact that they are meant for marketing and one of the functions of the libraries' is to promote their marketing. Marketing approach cannot be effective and efficient without evaluation. Hence it is imperative to evaluate the products and services. The effectiveness and efficiency and products and services need to be evaluated in the light of user requirements as these are designed basically to satisfy the different approaches to information. Users' specific requirements have direct bearing on the objectives of the parent institution in which users are working on certain research areas. Hence there are different ways and means of evaluation of information products and services.

Basically there are two ways of evaluating any entity, product or services one from the managerial view point and the other from users point of view. Since information products and services are user centric, evaluation from users' point of view seems more appropriate. However, managerial view point cannot

be neglected as these are provided by the parent organization whose manpower, cost, time and other resources are put to use.

5.3 Criteria:

5.3.1 Information products as information sources:

The very characteristics of information products resemble the characteristics of information sources or reference sources. These also resemble online information resources. Hence the criteria adopted to evaluate reference books or reference sources or information sources or online information sources could very well be applicable. There are many things to be considered for evaluation of reference works. Shore's (1939, 1954) fundamental approach "ASTAFS" – Authority, Scope, Treatment, Arrangement, Format and Special Features are relevant even today. His view points on evaluation of reference books are applicable in the same context with information products.

Parameters adopted by Shore include the following

5.3.1.1 Authority:

- Authoritativeness can be judged on the basis of qualifications, experience and reputation of the sponsoring body (if any), publisher, distributor, author(s), editor (s), compiler (s).

5.3.1.2 Scope: Scope includes:

- What the purpose of the work is as stated in the reference work?
- Has the purpose been fulfilled in the reference work?
- Does it follow a definite plan consistently?
- What is the extent of supervision provided by the creators of the work?
- What are the limitations with regard to subject; class of readers, up-to-dateness of materials?
- What is the overall coverage?

5.3.1.3 Treatment:

- How thorough, reliable and complete is the information?
- Does it show any bias on controversial topics?
- Has the space allotted for a topic related to the degree of importance attached to a topic?
- Who is the target audience for whom it is written?
- Does it address their needs?
- How readable is the reference work?

5.3.1.4 Arrangement:

- How is the arrangement of entries in the work?
- Is index provided?
- What different types of indexes are provided?
- Does it facilitate easy searching?

5. 3.1.5 Format:

- Do binding, quality of paper, typefaces and layout satisfy the minimum specifications?
- Are the illustrations, plates, diagrams, maps etc, of good quality and well produced?
- Are these directly related to the main text?

5.3.1.6 Special Features:

- What distinguishes it from other reference works of similar type?
- Does it include supplementary lists or appendices?
- Are the bibliographies up-to-date and accurate?
- What are devices used to keep it up-to-date?

Ranganthan (1961) based his evaluation of reference sources with the assistance of his seminal five laws of library science. Katz (1969, 1974), Grogan (1982), Subramanyam (1981) also had given criteria for evaluation of reference books/works on much similar aspects that include many parameters like authority, currency, audience, accuracy and accessibility. A review of websites many universities across the world indicate more or less the same factors – Authority, Purpose, Scope, Relevancy, Currency, Accuracy, Treatment, Arrangement, Use, Physical format, Price and other special features as far as print resources are concerned.

Seetharama (1997) suggests that information products can be evaluated based on:

- Achievement of its objectives
- Economic aspects
- Feedback from users (whether needs been met, levels or user satisfaction/ penetration achieved)
- Efficiency and effectiveness of performance
- Actual benefits derived (social and economic benefits as well)
- Effects on role played in advancing technology

With the tremendous availability of information in electronic format the criteria of evaluation changed a bit to cover such sources like Purpose, Authority, Accuracy, Objectivity, Currency, Reliability, Coverage, Format and Presentation, Special features. For evaluating web resources authority, e-mail address of the author, document URL, date of creation or revision and link to sponsoring institutional websites have been considered as parameters for evaluation.

Sharma and Jitendra Kumar (1988) summarized the factors to be considered for evaluation of e-information sources:

- Technical feasibility
  - Availability (remote, stand alone, networked, shared access)
  - Authentication (IP filtering or Login password)
  - Hardware and software compatibility and capability
  - Storage and maintenance (remote or local hosting)
  - Platforms that facilitate access to e-resources
- Functionality and Reliability
  - Search and retrieval functionality (truncation, browsing, search history, etc)
  - Exporting and downloading
  - Sorting and ranking abilities for database results
  - Interface
  - Integration
  - Reliability and availability (Response times, 24/7 access)
- Vendor support
  - User training and support
  - Trials and products demonstrations
  - Technical support and system notification process
  - Statistical reporting
  - Customization
  - Provision of bibliographic data
  - Data security and archiving policies

- Supply
  - Acquisition model (Purchase, Subscribe, pay per view, dedication)
  - Pricing model
  - Access options (single/multiple users)
  - Archiving and post-termination rights
  - Maintenance fees
  - Cancellation rights
- Licensing
  - Model/ Standard license
  - Governing laws
  - Liability for unauthorized use
  - Definition of authorized users
  - Definition of authorized sites
  - Fair use provision
  - Refunds
  - Period of agreement
  - Compliance with the Governing laws of consortia / library / organization
- Other factors that are significantly important are:
  - Currency
  - Value for money
  - Accuracy
  - Exhaustivity
  - Duplication

5.3.2 Information products and services as Information Storage and Retrieval System:

It was Lancaster (1971) who proposed five evaluation criteria that include coverage of the system, ability of the system to retrieve wanted items, ability of the system to avoid retrieval of unwanted items, Response time of the system and amount of effort required by the user to obtain the pertinent information. He identified three levels of evaluation – System effectiveness, cost effectiveness and cost-benefit evaluation.

5.3.2.1 System effectiveness: It is the evaluation of system's performance in terms of the degree to which it meets users' needs. It emphasizes on users' satisfaction which could be measured by determining the utility of information to the users in response to a user query.

1. Cost criteria
    a. Monetary cost of user (cost incurred per search, per subscription, per document)
    b. Other less tangible cost considerations such as users effort involved in
        i. In learning the working of the system
        ii. In actual use
        iii. In getting the documents through back up document delivery system
        iv. In retrieving information from the retrieved documents
2. Time criteria
    a. Time taken from submission of query to the retrieval of bibliographical references
    b. Time elapsing from submission of query to the retrieval of documents and the actual information and
    c. Other time considerations (waiting time to use the system such as online)

3. Quality criteria
    a. Coverage of databases
    b. Completeness of output
    c. Relevance of output
    d. Novelty of output
    e. Completeness and accuracy of data

5.3.2.2 Cost Effectiveness: Relates measures of effectiveness to measure of cost. It is the evaluation in terms of how to satisfy user requirements in the most efficient and economical way. It considers:

- Unit cost per relevant citation retrieval
- Unit cost per new relevant citation retrieval
- Unit cost per relevant document retrieval

5.3.2.3 Cost Benefit Evaluation: It is the evaluation to assess the worthiness of the system. It relates the cost of providing some service to the benefits of having the services available.

Later Vickery advocate six criteria divided into two sets –

Set 1: having parameters like coverage, recall and response time and **Set 2:** having parameters like Precision, Usability and Presentation. Cleverdon (1966) also proposed six criteria – Recall, Precision, Time lag, Effort required to search, Form of presentation, and coverage of the collection.

Many information scientists advocate that evaluation of an information service or product should always be user-centric. This will help the evaluators to pay more attention to those factors that can provide an improved service to the users. Saracevic and Kantor (1988) observe that key to the future of information systems and searching processes lies not in increased

understanding of human involvement with information. Cleverdon (1978) suggest that a user – oriented evaluation should try to answer the following

- To what extent does the system meet both the expressed and latent needs of its user community?
- What are the reasons for the failure of the system to meet users' needs?
- What is the cost-effectiveness of searches made by users themselves compared with those made by intermediaries?
- What basic changes are required to improve the output?
- Can the costs be reduced while maintaining the same level of performance?
- What would be the possible effect if some new services were introduced or an existing service were withdrawn?

Choudhray (2010) advocates that in order to ascertain the usability of a product or service one should know:

- Who the specified users' are?
- What their goals are in a specific format?
- Whether the given product or service can be used to achieve those goals.

Kuniawsky (2003) also favours usability studies as they are the best indicators of "whether you audience can use what you have made?' Thus it is clear from these discussions that usability studies will indicate clearly whether a product or service can be used by specific users easily.

5.3.3 Information Products and Services as Technical communications:

Pauley and Riordan (2004) views technical communications as information products and services originating from the products. Hence, the following criteria may be used to evaluate the information products.

1. What is the purpose of technical communications

a. Merely to inform or
b. To instruct or
c. To persuade

2. Audience centric
    a. Target oriented (Specific group)
3. Objective
    a. Plain, objective language
    b. Use terminology to be understood by the target group
4. Presentational
    a. Structural
    b. Use of visual aids or graphics
5. Ethical and responsible
    a. Take responsibility
    b. Acknowledge those who have helped, Proper citations
    c. Be honest
    d. Use language and visuals with precision

5.4 Institutions' present practices:

Library websites of institutions of higher education and research in developing countries were visited. It is observed that more or less the criteria adopted by Shores, Katz, Grogan, Lancaster, Vickery, Saracevic are being used with many modifications. Significant parameters noted were: Authority, Accuracy, Quality, Objectivity, Currency, Coverage, Appearance, Relevancy and Process of publication. One university was found adopting CRAAP Test (Currency, Relevancy, Authority, Accuracy and Purpose). Source of publication, target audience, reliability, Site structure and design and link

search were the other criteria considered by few institutions. Scope/Content, credibility, timeliness, footnotes and bibliographies, sponsorship, design, functionality and cost were also considered as criteria in few institutions.

Of all the universities, Rutgers University Libraries has come out with a well developed checklist based on a comprehensive research on the issue. Beck (2006) had identified 11 parameters as core evaluation criteria with 7 additional criteria which are as follows:

5.4.1 Researching a Product:

- Are there any evaluative reviews of the product available?
- Does the producer make customer lists available for contact with institutions who have had experience using this resource?
- Has contact been made with current users?
- Ask product related questions on library list serves which will cover all aspects of product purchasing like collection development and licensing issues, public services issues and technical issues.

5.4.2 Content Evaluation:

1. Authority
   - ✦ Does the publisher, sponsoring agency, vendor or producer have a good business reputation and considered reliable
   - ✦ Is the authority of the product clearly stated in the user documentation?
   - ✦ What is the authority of indexers?
2. Audience
   - ✦ Who is the primary audience for the product
3. Scope

   3.1 Subject Coverage

- What is the stated subject coverage for the resource?
- How many subjects are covered by the resource?
- Is this resource the authoritative file in its discipline?
- Are the titles covered appropriate for the subject area?
- Are the titles considered well respected and of high utility in the stated area of coverage?

3.2 Time coverage

- What is the time period covered in this resource?
- How many years of data are in the database?

3.3 Geographical Coverage

- Is it international in scope?
- Does it just biased to a particular region?
- Are there any additional geographic restrictions?

4. Currency
   - How current is the information in this resource?
   - What is the lag time?
5. Update
   - How frequently the source is updated?
6. Language
   - Are the multiple languages represented in the publications
   - If non English, any abstract or jist provided in English?
7. Publications
   - What types of materials are covered?
   - How many publications are covered?
8. Record Format

- ✦ Are abstracts available for all records or selected only?
- ✦ Are articles available in full text
- ✦ What is the format of the document?
- ✦ Are visual graphics parts of the document?

9. Relation to similar works
   - ✦ How does it compare with similar works on the same topic?
   - ✦ Is it similar in scope to other works available in the collection?
   - ✦ Is there any significant content overlap between these resources?
   - ✦ How this work can be considered as unique or distinguishable from others?
10. Product comparisons
    - ✦ If the product is available from multiple vendors then does this is different from others?
    - ✦ What are the differences in searching interface?
    - ✦ What are the differences in display options?
    - ✦ What are the differences in input and output options?
11. Availability
    - ✦ Is the resource available on web now?
    - ✦ Is the resource available to mount locally?
    - ✦ Does it require regular updating?

5.4.3 Depth of Indexing:

1. Accuracy
   - ✦ How reliable is the information provided?
   - ✦ What is the extent of spelling mistakes in the document that hinders searching?

- ✦ Is the indexing quality accurate?
- ✦ Are the bibliographic citations accurate?
- ✦ What quality control procedure does the producer use?

2. General Indexing Features
   - ✦ What are the basic components of the record?
   - ✦ What fields of the record are searchable?
   - ✦ Can the full text be searched?
   - ✦ Can the indexing be controlled locally?
3. Author indexing
   - ✦ Is there a provision to search by author's name?
4. Subject indexing
   - ✦ Are all facets of the content of each document indexed?
   - ✦ How depth is the subject indexing?
   - ✦ Do indexes provide unique access points?
   - ✦ To what extent the vocabulary is controlled in the document
   - ✦ Does the thesaurus include scope notes?
   - ✦ Can one link directly from the thesaurus to a set of items?
5. Special Features
   - ✦ What unique features distinguish this source from another?
   - ✦ What is the image quality of graphs, illustrations and pictures?
   - ✦ Is a list of sources indexed available with the product
   - ✦ Can local holdings be linked to the database?
   - ✦ Whether Document Delivery Service can be offered?

5.4.4 Searching:

1. Interfaces
   - ✦ Is searching easy for average users?
   - ✦ Are there both novice and expert searching interfaces?
   - ✦ What kind of support system online/offline the interface provides?
   - ✦ Is interface user friendly?
2. Structures
   - ✦ What kind of searching facilities are available (Boolean, Keyword, Full text, browsing, weighed searching)
3. Inverted indexes
   - ✦ What search indexes are available
4. Vocabulary Linking
   - ✦ Is there hyper linked searching capabilities?
5. Truncation
   - ✦ Whether truncation facilities available? If yes what different truncation modes are available?
6. Positional searching
   - ✦ Is proximity searching available and if yes how in depth is the proximity searching?
   - ✦ Can a search strategy be saved and used in future?
7. Search limitations
   - ✦ What search limits are available?
8. Search Display options
   - ✦ Any search display options are provided?
9. Results Display options

- ✦ What are the different results display options available?

10. Output options

- ✦ What different output options are provided?

5.4.5 Cost:

- ✦ What is the pricing structure of the product

5.4.6 Documentation:

- Does the product is accompanied with adequate documentation?
- Is the user documentation accurate, easy to use, and comprehensive?
- Is there a tutorial available for users?

5.4.7 Training:

- Is there a provision for training
- Are user friendly tutorials available?

5.4.8 Customer relations and Support:

- How effective is the customer relations and support extended to the user community?

5.4.9 Demonstration and Trails:

- Whether demonstrations and trials are available?

5.4.10 Publicity and promotions:

- Whether there is any system that promotes the use of the resource?
- Whether promotional content is made available to those who need it?

5.4.11 Continuous Assessment:

- Whether provision for continuous assessment is made?
- Is there an option for feedback from the users?
- How this feedback will be used to improve the product or discontinue the product or service?

5.4.12 Other criteria:

- Public service issues
- Technical service issues
- System issues
- Pricing
- Consortia relationships
- Copyright issues
- Licensing issues

5.5 Inferences:

Based on the above discussion it can be inferred that the following criteria can be adopted to evaluate an information product.

- Content
- Information architecture
- Navigation
- Access (searching and browsing)
- Help provided
- Customization
- Innovative technologies used to manage information
- Aesthetics (Font colour, size, general layout, use of white space)
- General usability conventions

5.6 Model adopted:

Based on the inferences the following model is adopted in the present study Information products are the ones that contain restructured and synthesized information. Hence information products need to be evaluated from

their contents point of view only. As such the following parameters could be used

1. **Content Extent:** The extent to which a subject is treated i.e subject's depth, breadth, etc
2. **Technical sophistication:** Includes the technical level and understandability of the contents, readability, use of technical jargons, etc.
3. **Temporal aspect:** Describes time dimension involved. It means how current or how retrospective the information is. It can also be used to know how frequently the product is being updated.
4. **Information Quality and accuracy:** Describes the degree of known validity and reliability of information to be included in the product or service
5. **Degree of invariability or value added:** Defines the degree to which information is presented as contained in the original text(s). It also considers the degree of value added in terms of point of view, comparison, judgement etc.
6. **Editorial Qualities:** It includes style of presentation, grammar, syntax, clarity, crispness, coherence etc.
7. **Overall rating:** Based on the above six criteria its overall usability is measured.

Accordingly information products and services are evaluated using 5 – point Lickert scale as mentioned below.

Table-5.1
Criteria for Evaluation of Information Services by the academic user community

Information Service	Content Extent	Technical sophistication	Temporal aspects	Accuracy	Value	Quality	Search effort	Over all Rating
Reference service	Highly Comprehensive – 5 to very superficial- 1	Very high – 5 to very low – 1	Current – 5 to very old -1	Very high – 5 to very low -1	Very high – 5 to very low – 1	Best – 5 to worst – 1	Too little – 5 to too high – 1	highly useful – 5 to highly un-useful – 1
Referral service								
Literature Search service								
CAS								
SDI								
Newspaper Clipping Service								
Technical Enquiry service								
Translation Service								
Reprographic service								
Inter Library Loan								
Document Delivery Service								
Outreach services								

Table-5.2
Criteria for Evaluation of Information Products by the academic user community

Information Product	Content Extent	Technical sophistication	Temporal aspects	Accuracy	Value	Quality	Search effort	Over all Rating
Question Bank	Highly Comprehensive – 5 to very superficial- 1	Very high – 5 to very low – 1	Current – 5 to very old -1	Very high – 5 to very low -1	Very high – 5 to very low – 1	Best – 5 to worst – 1	Too little – 5 to too high – 1	Highly useful – 5 to highly un-useful 1
Virtual Library Service								
Ask – A – Librarian								
Web based user education								
Access to online databases								
FAQ								
Subject Gateways								
Library brochure								
Accession lists/ List of additions								
webOPAC								
Research in Progress								
ETD								
Link to e-books								
Link to e-journals								
Link to e-coursewares								
Current awareness Bulletins								
Bibliographies								
Data sheets								
In-house journals								
E-Newsletters								
Institutional Repository of the University								
Reviews								

5.7 Conclusions:

Evaluating information products and services is an important activity in libraries. The effectiveness of the products and services should be evaluated in relation to parent institutions' stated objectives, internal strengths and weaknesses and users' need, use and satisfaction. The products and services need to be regularly evaluated and based on the feedback these should be updated. If any product or service is no longer in demand or very difficult to provide such product or service then such product or service should be abolished. If it is required to introduce new product or service to meet the demands of user community such product or service should be introduced. The model proposed may help in conducting such evaluation studies.

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CHAPTER-6
DATA ANALYSIS AND INTERPRETATION

6.1 Introduction:

This chapter analyses the data elicited from two sources namely the websites of 51 universities and 764 active users chosen by adopting a sampling technique from all the university libraries. The data is analysed in two sections viz., University Websites' analysis and Users perspectives.

6.2 University Websites:

Official Websites of 51 universities which were in existence as on 22.10.2015 were visited between 09.08.2014 and 22.10.2015. Basic information like year of establishment, nature of university, accreditation status and ranking of the universities, validity of the accreditation were noted from the websites. Further, Library and Information Services including Web enabled services provided by the university libraries and Information Products indigenously developed by the university libraries were also noted down in a worksheet specially designed for the purpose. Connectivity to various social media for library purposes was also analysed. Websites were also analyzed to know whether any mobile based library services are provided and whether any pricing is fixed for LI products and services. The data is tabulated from Table-6.1 to Table-6.14.

6.2.1-General Information:

Table-6.1
Universities: Year of establishment wise

Year of establishment	Number	Percentage
2011-2015	9	17.65
2001-2010	14	27.45
1981-2000	14	27.45
1961-1980	10	19.61
1900-1960	4	7.84
Total	**51**	**100.00**

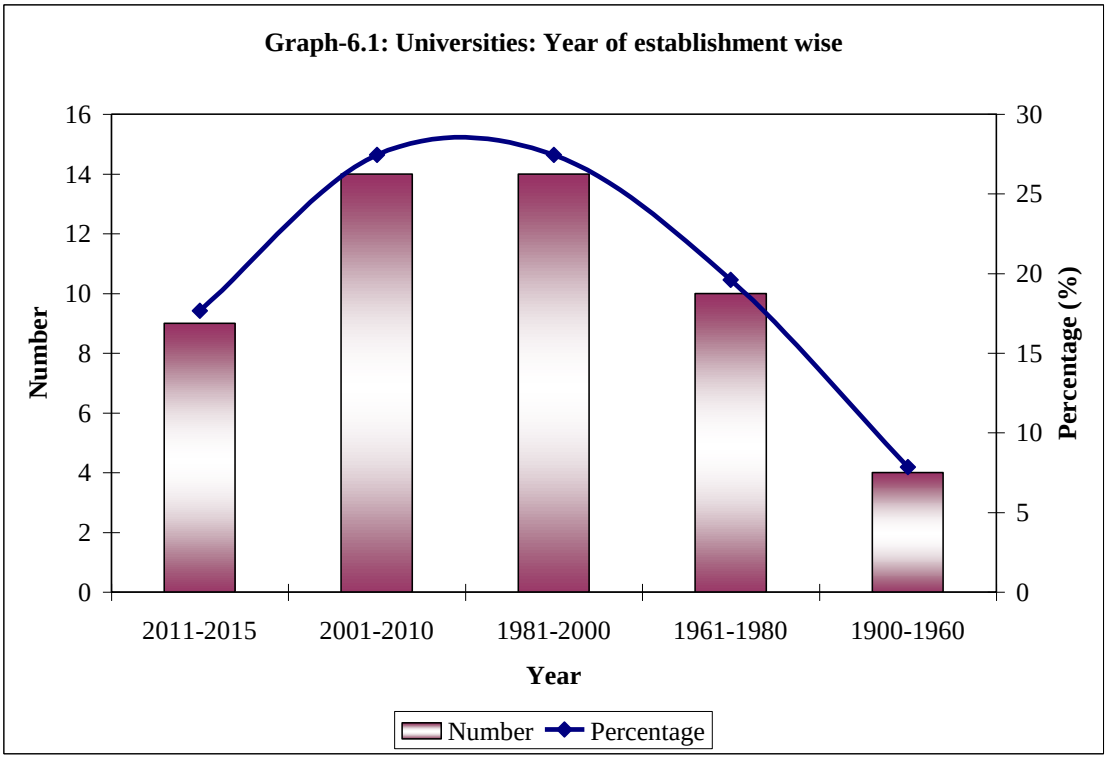


Table 6.1 depicts the year of establishment of different universities under study. It is found that among 51 universities 27.45% (N=14) of universities were established between 2001 to 2010 and 1998-2000. This indicates the fact that more than half of the universities were established between 1981 and 2010. Nearly one-fifth (19.61%, N=10) of the universities were established between 1961 and 1980 and these can be considered as old. 17.65% (N=9) universities were established between 2011 and 2015 and may be treated as new universities. Around 7.84% (N=4) universities were established between 1900 and 1960 which can be identified as too old.

Table-6.2
Nature of University

Nature	Number	Percentage
Central	1	1.96
State	25	49.02
Private	11	21.57
Deemed	14	27.45
Total	**51**	**100.00**

Graph-6.2: Nature of University

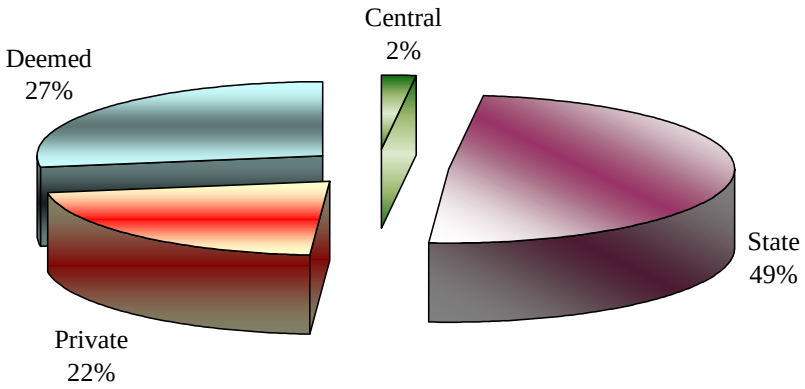


Table-6.2 depicts the nature of universities in Karnataka. The data shows that there was one Central University (1.96%, N=1), twenty five (49.02%) state universities, fourteen (27.45%) deemed universities and eleven (21.57%) private universities as on 22.07.2015.

Table-6.3
Accreditation of universities

Accreditation	Number	Percentage
No	21	41.18
NAAC	26	50.98
ICAR	3	5.88
IACBE	1	1.96
Total	**51**	**100.00**

The accreditation details of the universities are provided in table 6.3. It is found that 21 (41.18%) universities were not at all accredited. More than half of the universities (N=26, 50.98%) were accredited to NAAC and three (5.88%) universities were accredited by ICAR and only one (1.96%) university was accredited by IACBE (International Accreditation Council for Business Education).

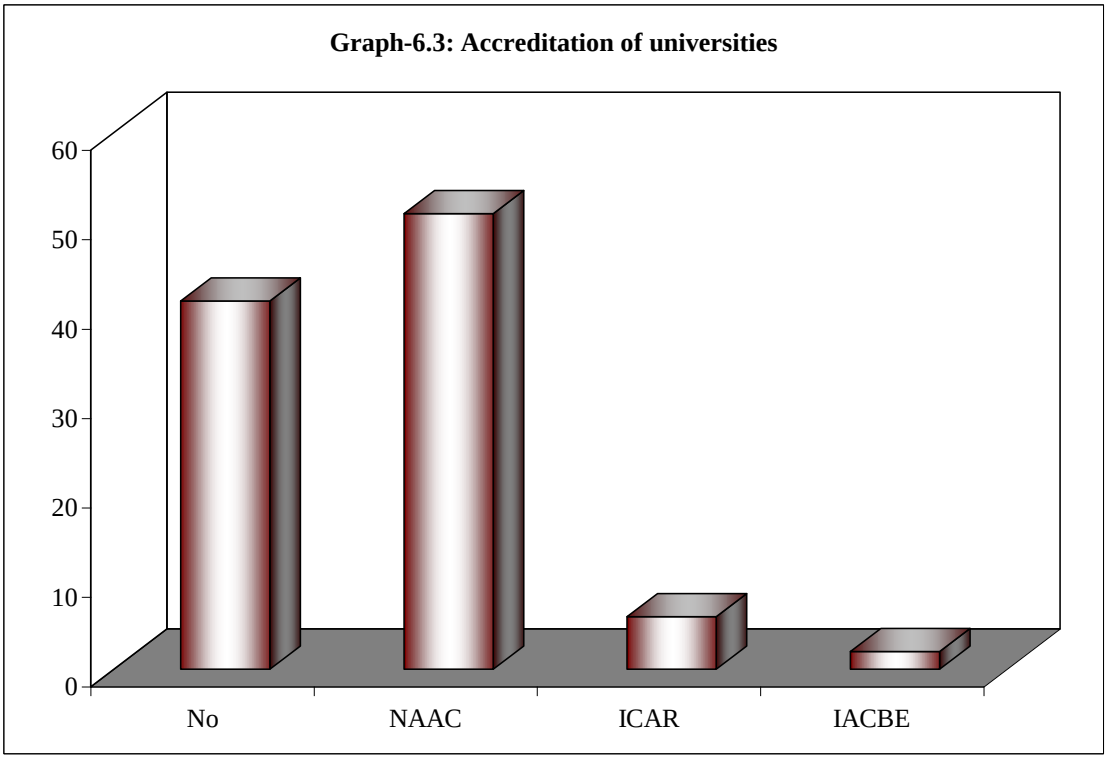


Table-6.4
Accreditation status of universities

Status	Number	Percentage
0	21	41.18
A	18	35.29
A+	2	3.92
A++	2	3.92
B	7	13.73
B++	1	1.96
Total	**51**	**100.00**

The accreditation status of the universities is provided in table 6.4. It is found that among 51 universities, 41.8% were not accredited (N=21), more than one third (N=18, 35.29%) were accredited with 'A', 13.73% (N=7) were accredited with 'B', 3.92% (N=2) each were accredited with 'A+' and 'A++' and only one university (1.96%) was accredited with 'B++'.

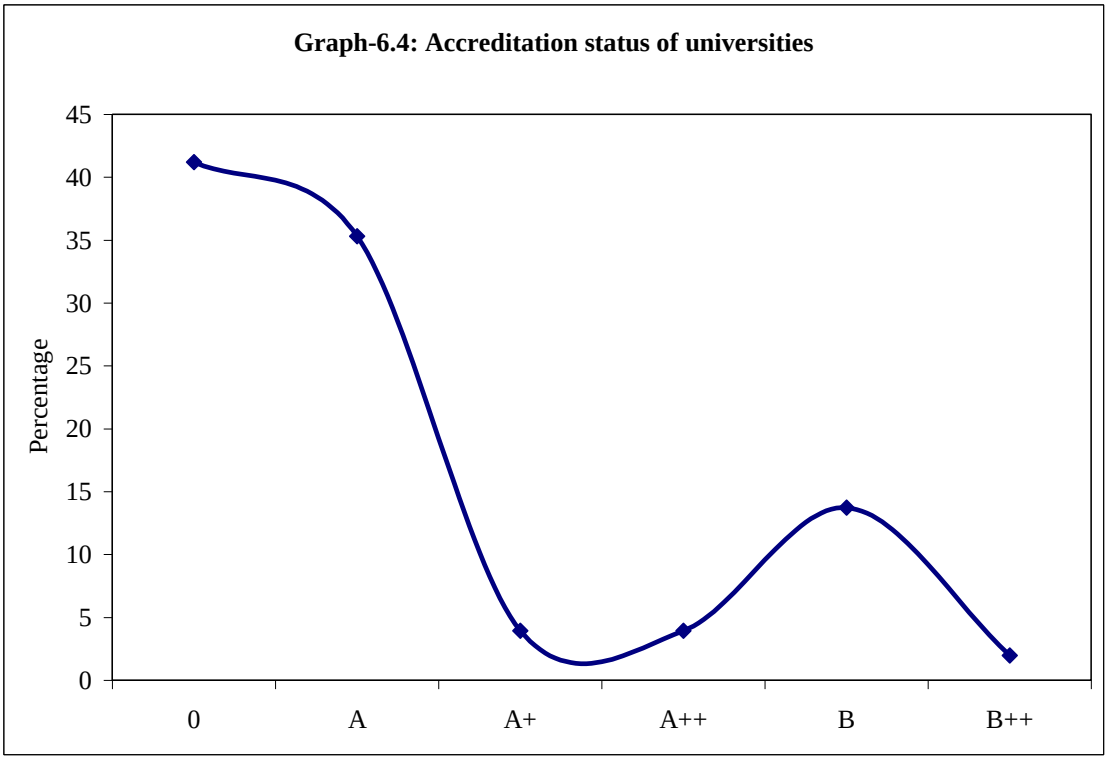
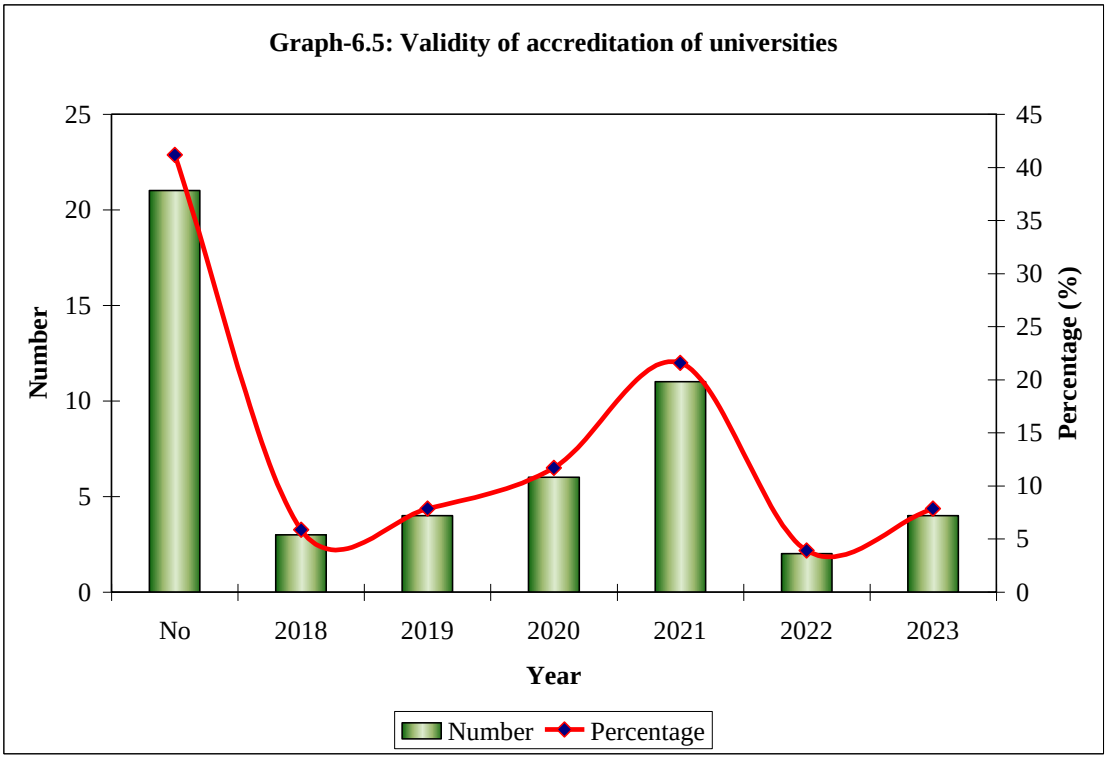


Table-6.5
Validity of accreditation of universities

Validity	Number	Percentage
No	21	41.18
2018	3	5.88
2019	4	7.84
2020	6	11.68
2021	11	21.57
2022	2	3.92
2023	4	7.84
Total	**51**	**100.00**

Table 6.5 depicts the validity of accreditation of universities and it is found that among the 51 universities, 41.18% were not accredited (N=21). Within the remaining universities 21.57% (N=11) were accredited up to 2021, around 11.68% (N=6) were accredited up to 2020, 7.84% (N=4) were accredited till 2019 and 2023 each. Only 3 (5.88%) universities were accredited till 2018 and only 2 (3.92%) were accredited up to 2022.



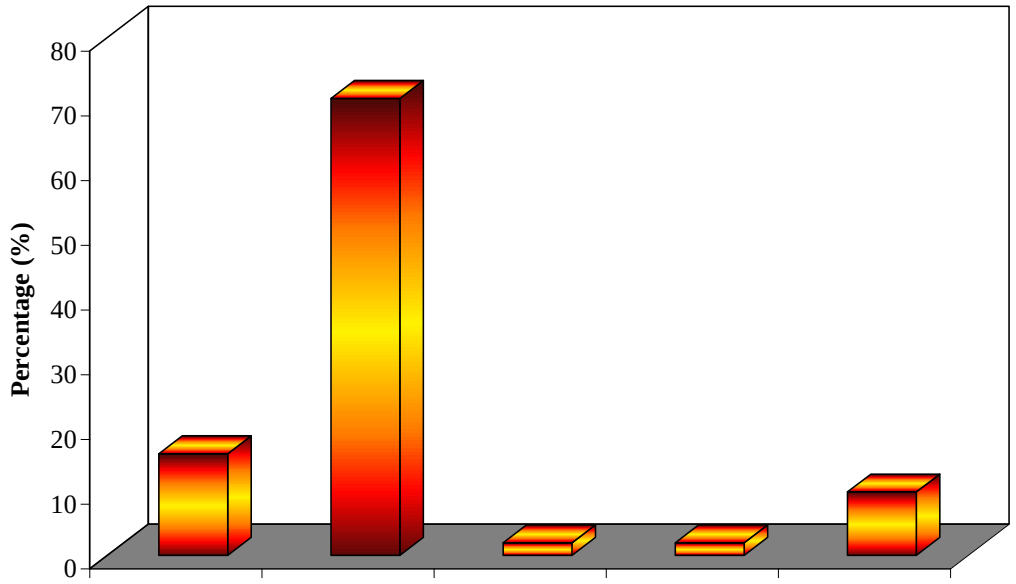
6.2.2 Library websites:

Table-6.6
Nature of university library websites

Nature of websites	Number	Percentage
Independent	8	15.69
Part of University	36	70.59
Library menu does not open	1	1.96
Need to develop link	1	1.96
No details	5	9.80
Total	**51**	**100.00**

Nature of university libraries is discussed in table 6.6. It is found that all the universities had their websites. Nearly three fourth of the universities had (N=36, 70.59%) library websites as part of the university websites, only 15.69% (N=8) of the libraries had independent websites, in 5 (9.80%) universities there were no details regarding their library. Either menu did not open or the library needed to develop their link in one each of the university library.

Graph-6.6: Nature of university library websites



6.2.3 Library and Information Services:

Table-6.7

Library and Information Services provided by the university libraries

(N=44)

LI services	Number	Percentage
Reference service	36	81.82
Referral service	12	27.27
Literature Search Service	11	25.00
CAS	18	40.91
SDI	04	9.10
Newspaper Clipping Service	21	47.73
Abstracting Service	00	00
Data Service	00	00
Technical Enquiry Service	01	2.27
Translation Service	01	2.27
Reprographic Service	44	100.00
Inter Library Loan Service	25	56.82
Document Delivery Service	20	45.45
Bibliometric Service	00	00
Outreach service	01	2.27
Question Paper Bank	06	13.64

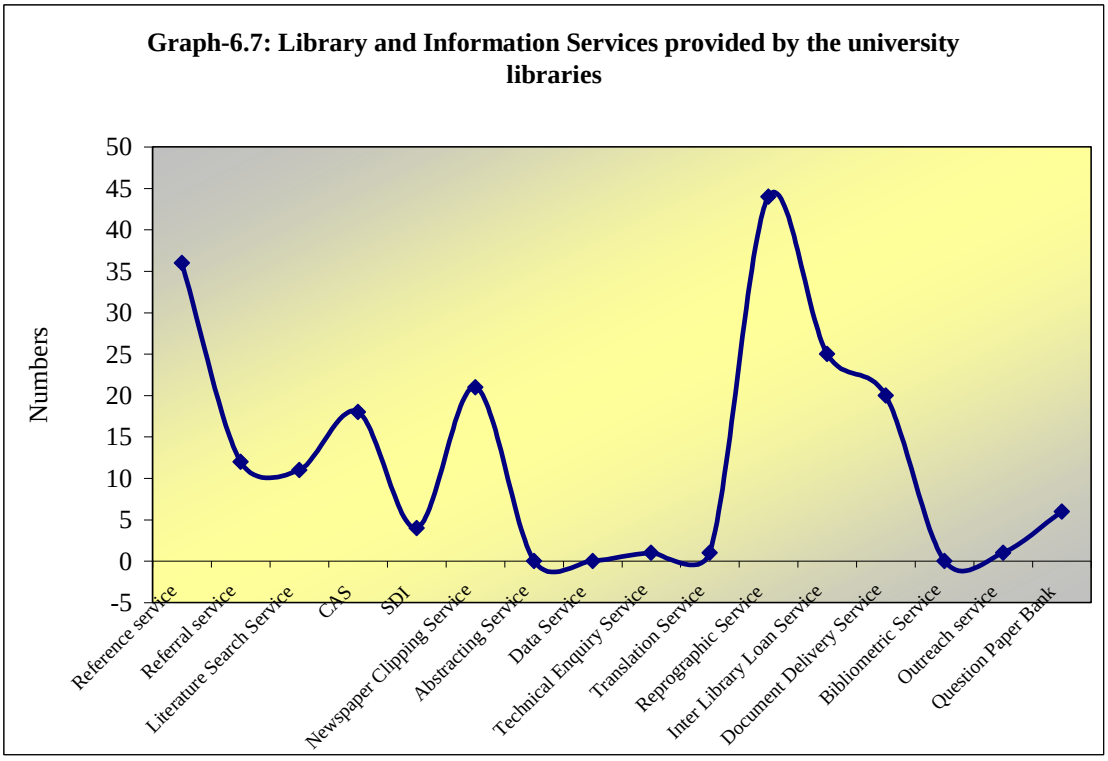


Table-6.7 provides the details of different library and information services provided by the university libraries mentioned in their websites. It can be observed that all the universities provided reprographic service (N=44, 100%) in their libraries. 81.82% (N=36) of them provided reference service, 56.82% (N=25) provided inter library loan, 47.73% (N=21) provided newspaper clipping service. It can also be observed that nearly half (45.45%, N=20) of the university libraries provided document delivery service which is very much required by the university library users. More than two-fifth (40.91%, N=18) university libraries provided current awareness service. More than one fourth of universities i.e., 27.27% (N=12) provided referral service, while one fourth (25%, N=11) provided literature search service and question paper bank service was provided by six (13.64%) university libraries. We can find that only four (9.10%) university libraries provided selective dissemination of information service and the services like technical enquiry service, translation service and outreach service were provided by one (2.27%) library each.

The services like abstracting, data service and bibliometric service were not provided by any of the university libraries of Karnataka. This means the university libraries were not providing majority of the library services which were helpful to the user community to search information.

6.2.4 Web enabled services:

Table-6.8
Web enabled services provided by the University libraries

(N=44)

Web-enabled services	Number	Percentage
Virtual Library Service	06	13.64
Ask- A – Librarian	04	9.10
Bulletin Boards	00	00
Web based user education	34	77.27
Web forms	00	00
Access to online databases	19	43.18
FAQ	03	6.82
Subject Gateways	13	29.55

Graph-6.8: Web enabled services provided by the University libraries

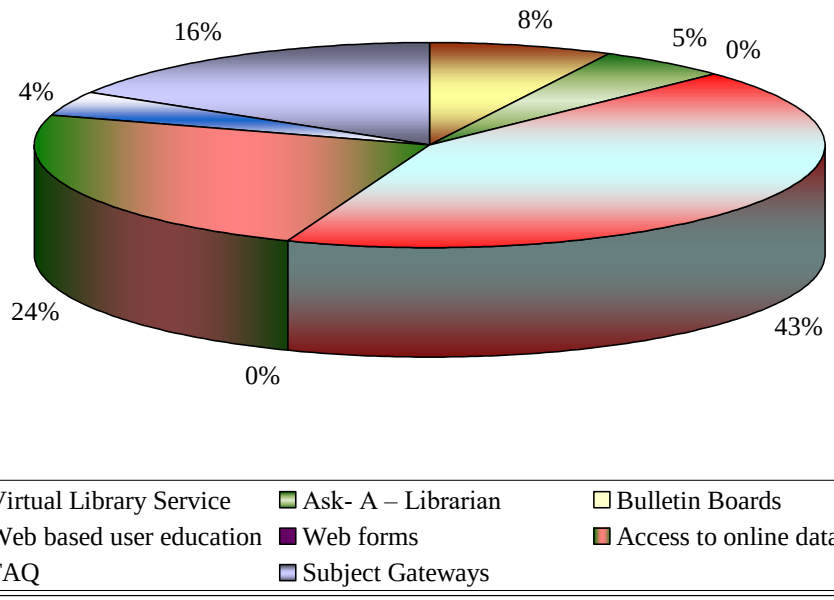


Table 6.8 provides the details of the university libraries providing web enabled services through their library websites. It can be found that more than three fourth (N=34, 77.27%) of university libraries were providing web based user education in their libraries and more than two-fifth (43.18%, N=19) of the university libraries provided access to online databases. 29.55% (N=13) provided access to subject gateways, 13.64% (N=6) provided virtual library services, 9.10% (N=4) provided ask-a-librarian service, 6.82% (N=3) provided FAQ. It is also found that none of the university libraries were providing bulletin board service. It can also be observed that many of the innovative web-enabled services were yet to be introduced by the University libraries.

6.2.5 Information Products:

Table-6.9

Information Products indigenously developed by the university libraries

(N=44)

Information products	Number	Percentage
Library brochure	02	4.55
Accession lists/ List of additions	10	22.73
web OPAC	31	70.45
Database of experts	25	56.82
ETD	25	56.82
Link to e-books	36	81.82
Link to e-journals	37	84.10
Link to e-course wares	30	68.18
Current Awareness Bulletins	06	13.64
Bibliographies	03	6.82
Datasheets	00	00
Handbooks/Manuals	00	00
Expert Databases	00	00
State of the art reports	00	00
Trend reports	00	00
Technical digests	00	00
Translation pools	00	00
In-house journals	04	9.1
E-Newsletters	06	13.64
Institutional Repositories of the University	18	40.91
Reviews	01	2.27
Trade literature Bulletins	00	00
Infographics	00	00

Graph-6.9: Information Products indigenously developed by the university libraries

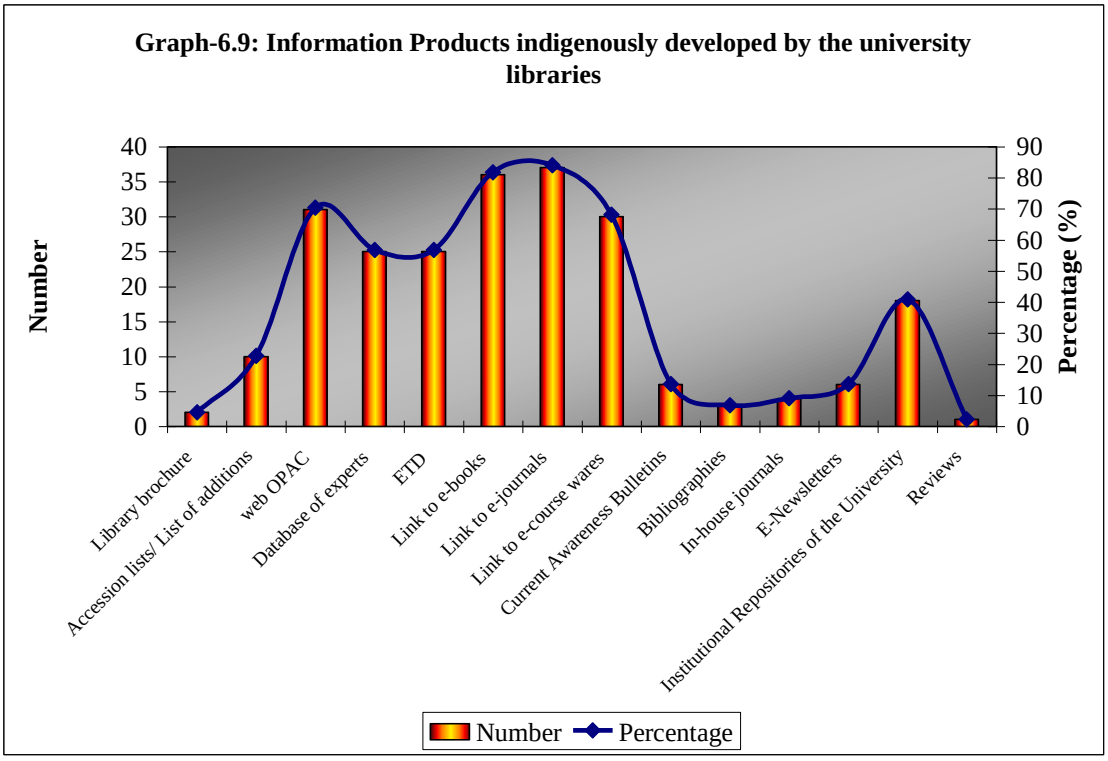


Table-6.9 lists the information products indigenously developed by the university libraries. It is found that majority of the university libraries (N=37, 84.10%) provided link to e-journals, 81.82% (N=36) provided link to e-books, two third (N=31, 70.45%) of the university libraries provided web OPAC and 68.18% (N=30) provided link to e-courseware. More than half of the university libraries (N=25, 56.82%) provided database of experts and ETD, 40.91% (N=18) provided institutional repositories of the universities, 22.73% (N=10) provided accession list/ list of new additions, 13.64% (N=6) provided e-newsletter, around 9.1% (N=4) of them provided in-house journals, 6.82% (N=3) of the university libraries provided Bibliographies, 4.55% (N=2) of them provided their library brochure, and only one university library provided review service. Many other web enabled services like providing datasheets, handbook/manuals, expert database, state of the art reports, trend reports,

technical digests, translation pools and trade literature bulletins were not provided by any of the university libraries. It can be interpreted that the status of providing indigenously developed information products was not really encouraging as many of them were yet to provide such products.

6.2.6 Social Media:

Table-6.10
Provision of social media based LI services

Provision	Number	Percentage
Yes	21	47.73
No	23	52.27
Total	**44**	**100.00**

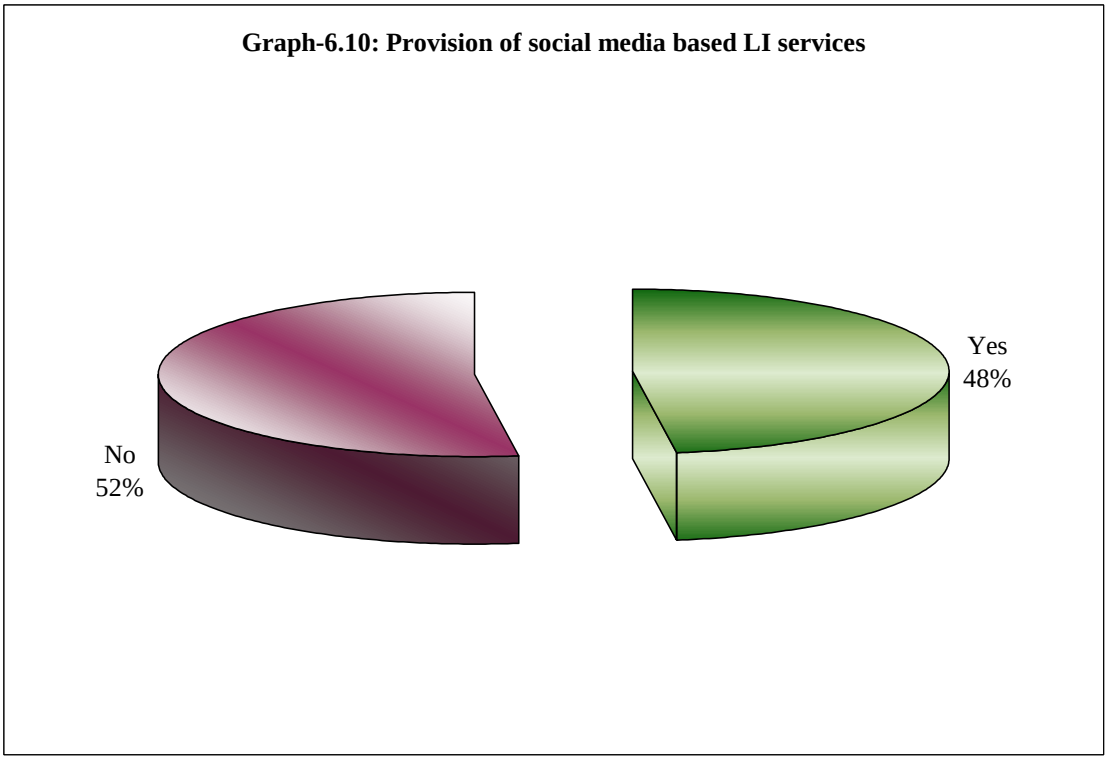
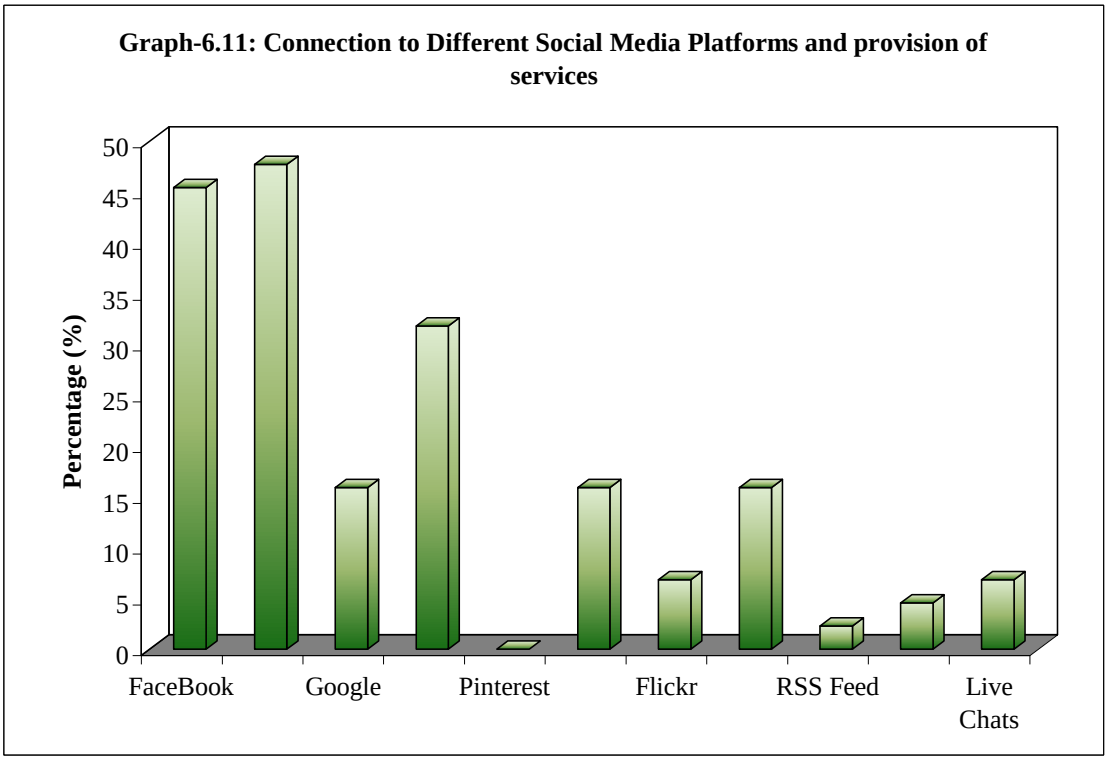


Table 6.10 shows the provision of social media based LI services, it is found that more than half of the university libraries (N=23, 52.27%) did not use social media where as the remaining 47.73% (N=21) used different social media for providing LI services.

Table-6.11
Connection to Different Social Media Platforms and provision of services

(N=44)

Social Media	Connection	
	Number	Percentage
FaceBook	20	45.45
Twitter	21	47.73
Google	07	15.91
YouTube	14	31.82
Pinterest	00	00
Linked-In	07	15.91
Flickr	03	6.82
Instagram	07	15.91
RSS Feed	01	2.27
Blogs	02	4.55
Live Chats	03	6.82



The different social media platforms used by the university libraries for the provision of services was analysed and it is found from 6.11 that 47.73% (N=21) universities were connected to twitter, and 45.45% (N=20) of them

were connected to FaceBook, 31.82% (N=14) were connected to Youtube and here they upload the educational videos of their universities. When analysed it is also found that 15.91% (N=7) of the universities were connected to Google, Linked-in and Instagram each. Very few universities were connected to Flickr and live chats (N=3, 6.82%), 4.55% (N=2) of universities had their own blogs and only one university was connected to RSS Feed. We can also see that Pinterest social media was not been connected to any of the universities.

a. Facebook:

It is found that the optimum usage of Facebook was not made, as only few notifications, photos, posts, videos regarding university functions were uploaded. Only Mangalore University, Mangalore and Visveswaraya Technological University, Belagavi had provided linkages to the library web pages through Facebook. And further through the Facebook account the user could access the library services like WebOPAC, E-resources, remote access facility, etc.

Nine private university libraries were linked to Facebook through their websites, while one university library had connection to Facebook but no further linkages were found. Of the 9 private universities only 2 libraries did provide library services like OPAC, Knimbus search, E-Resources, through Facebook. The remaining private university websites (N=7) only provided few notifications, posts, photos, events' videos, profile of universities, etc.

It is also found that a majority of deemed universities were not connected to Facebook while 5 deemed universities were connected to Facebook through university websites. Among them websites of Christ University, Bengaluru and Swami Vivekananda Yoga Anusandhana Samsthana, Bengaluru were linked to

library webpages through Facebook wherein different services of libraries could be accessed like open access material, repository, research/reference manager, online library, institutional membership, library user manual, library links, library catalogue, digital library, e-Books, e-Journals, newspapers, etc. Whereas through other university websites we could only find uploading of posts, videos, photos, notifications, activities of universities, latest news, events and so on.

It can thus be analyzed that deemed universities were lagging behind in utilizing the potentialities of Facebook compared to other categories of universities. Further it can also be interpreted that though more number of private universities were connected to Facebook its optimum usage was not exploited by them and library services like reference, referral and alert services, which could be easily provided with the help of such online social networking services had not been provided.

b. YouTube:

Only 5 state/central universities were connected to Youtube networking service with only 4 universities accounting for uploading few general videos. Except Tumkur University, Tumkur no other university in the state had uploaded special lectures in its website. Among the private universities 8 were connected to Youtube while only 4 deemed universities were connected to Youtube. Only few general videos were uploaded by these universities. In true sense the optimum utilization of the Youtube social networking services was not done by any of the university whether state or private or deemed.

c. LinkedIn:

It is found that among state/central universities only Tumkur University, Tumkur was linked to LinkedIn Networking Site with 67 plus followers whereas Gulbarga University website had mentioned the site but showed no

further links. No other State/Central University in the state was linked to LinkedIn. Half of the private universities (N=6) were linked to LinkedIn Networking Site wherein there were great number of followers for Alliance University, Bengaluru and Azim Premji University, Bengaluru. Reva Institute of Technology and Management, Bengaluru had 199 followers and it also provides detailed profile of the university. Rai Technology University, Bengaluru was also connected to LinkedIn.

Only 2 deemed universities (13.33%) namely Jain University, Bengaluru and IIIT, Bengaluru were connected to LinkedIn. IIIT, Bengaluru had huge number of followers and it also updated recent events through LinkedIn. None of the other deemed universities were connected to LinkedIn Networking Site. Thus it can be interpreted that the potentialities of LinkedIn were not exploited by a majority of university libraries though few private universities were quite active in the use and adoption of LinkedIn.

d. Twitter:

Though 10 State/Central Universities (37.03%) were connected to Twitter only 7 were active. Majority of the universities account provided general tweets, following and followers. Among them few of the accounts also provided information on university activities, photos, announcements, notifications, few also provided certain official tweets, recruitment tweets and conference tweets also. As far as library services and library related activities were concerned, no tweets are found. All the 12 universities (100%) were connected to Twitter. There were numerous tweets, following and followers. There were photos, posts, likes, lists uploaded in the twitter account of the various university website. Among 15 Deemed universities only 6 (40%) of

them had twitter accounts. Only general tweets, following and followers were found and no library related tweets could be traced. It can thus be interpreted that twitter was most popular among the private universities, but its utility was restricted to general university inquiry, admissions and other purposes with absolutely no use was made for library activities.

e. Other Networking Sites:

There are different social networking sites which are useful to provide different libraries services like *aNobii* help to share reviews and recommendations on book and also to inform due date alerts and lending services; by creating a *blog*, any information could be disseminated; A *Google+ u*ser profile is a public visible account of a user that is attached to many Google properties. It includes basic social networking services like a profile photo, with directory type biographical sketch. *Pinterest* is a web and mobile application that operates a photo sharing website. *Instagram* is an online mobile photo-sharing, video-sharing, and social networking service that enables its users to take pictures and videos, and share them either publicly or privately on the app, as well as through a variety of other social networking platforms; *Flickr* shares new image collections and can create image sets with metadata.

It is also found from the table that 5 state universities (18.51%) were connected to different networking sites. Gulbarga University, Kalaburagi; VTU, Belagavi; Karnataka Samskrit University, Bengaluru; University of Agricultural Sciences, Dharwad were connected to google plus (Google+) wherein photos were uploaded which were general in nature. VTU was also connected to Flickr which displayed general photos uploaded. Bangalore University was connected

to BU News through which one could access different library services like webOPAC, ETD Repositories, etc.

8 of the private universities (75%) were connected to different social networking sites. Google plus connectivity was found in PES University, Bengaluru; Reva Institute of Technology and Management, Bengaluru; Presidency University, Bengaluru; Rai Technology University, Bengaluru; Dayanand Sagar University, Bengaluru; and KLE Technological University, Hubballi wherein general photos were uploaded. PES University was also connected to Pinterest and Instagram where one could find many posts, photos, following and followers. Presidency University was also connected to Pinterest, Tumblr, G-mail, E-mail, etc.

Only 4 deemed universities were connected to different networking sites. Christ University was connected to Blogspot, Flickr, and Google play. NITTE University was also connected to Blogspot where in only photos were uploaded. Jain University was connected to Google plus, and Instagram and Swami Vivekananda Yoga Anusandhana Samstana was connected to Google plus where general photos were uploaded. Again it can be analyzed that these were all used for general purposes and usage of these social media for library purpose was completely neglected.

6.2.7 Mobile based library services:

Table-6.12
Provision of mobile based LI services

Provision	Number	Percentage
Yes	04	9.10
No	40	90.90
Total	**44**	**100.00**

From Table 6.12 it can be observed that a greater majority (90.90%, N=40) of the university libraries did not provide mobile based LI services. A very few university libraries (9.10%, N=4) provided mobile based LI services.

Table-6.13
Mode of delivery of mobile based LI services

(N=4)

Mode	Number	Percentage
Using Whatsapp	0	0
Developing app for the library	0	0
SMS Alerts	4	9.10

When tried to know the mobile based services for providing LI services it is found from table 6.13 that SMS alert (N=4, 9.10%) was the only method used to provide LI service through different university libraries.

6.2.8 Pricing of LIS services and products:

Table-6.14
Pricing of LI services and products

Pricing	Number	Percentage
Yes	00	00
No	45	100.00
Total	**45**	**100.00**

When analysed it is found from 6.14 that none of the university libraries charged money for providing the mobile based services. It was provided free of cost.

6.3 User Evaluation:

Table-6.15
Designation-wise distribution of users

Designation	Number	Percentage
Teacher	197	25.79
Research Scholar	567	74.21
Total	**764**	**100.00**

From Table-6.15 it can be found that of the 764 users chosen from the universities, nearly three fourth of them were research scholars while the other

one-fourth of the study population was involved in teaching. This indicates that research scholars were more active users of libraries compared to teachers.

Graph-6.12: Designation-wise distribution of users

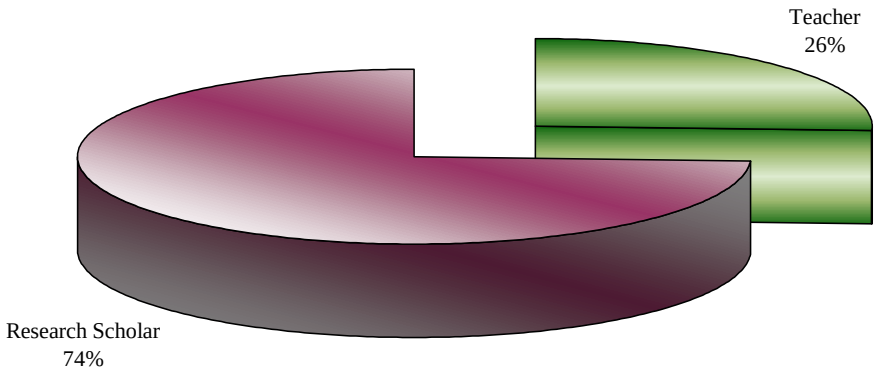


Table-6.16
Qualification-wise distribution of users

Qualification	Number	Percentage
Post-Graduation	564	73.82
Ph.D.	187	24.48
P.D.F.	13	1.7
Total	**764**	**100.00**

From Table-6.16 it can be found that of the 764 users, the study population consisted of nearly three fourth of post-graduates (73.82%, N=564) while a very small percentage of them were pursuing PDF (1.7%, N=13) and nearly one-fourth of the user community had Ph Ds to their credit. This is quite but natural as the study population comprised of more number of research

scholars. A significant number of PDFs were also found in the universities pursuing their post-doctoral research.

Graph-6.13: Qualification-wise distribution of users

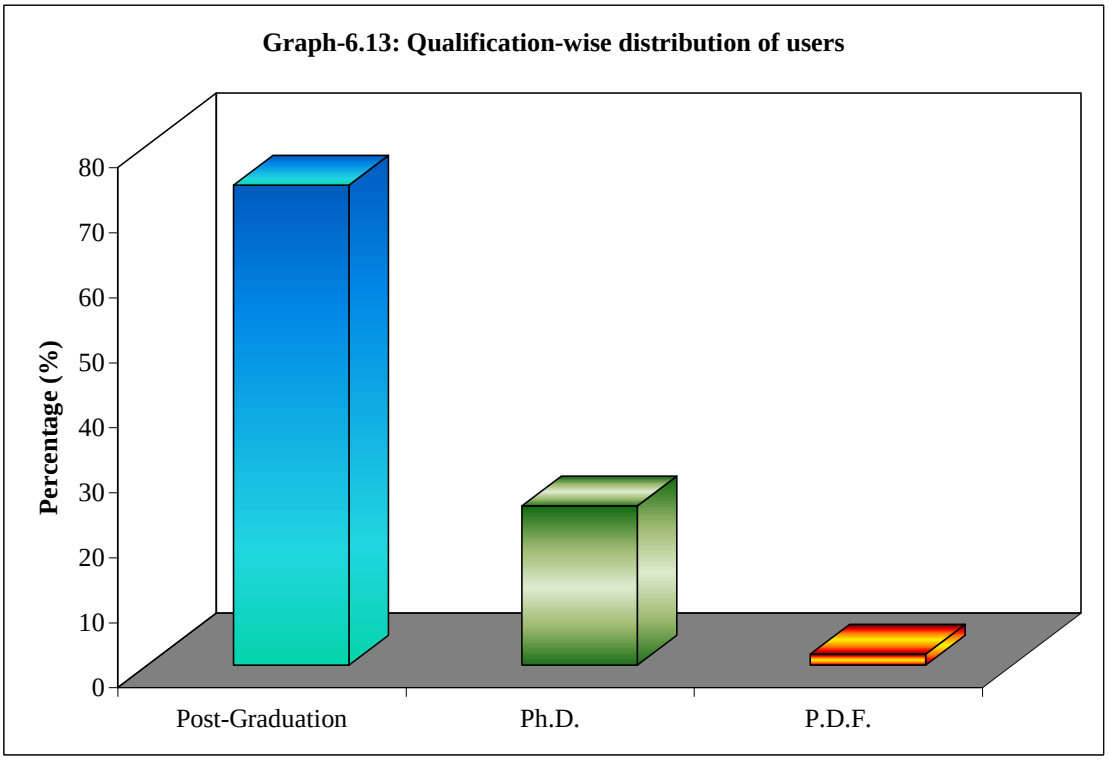


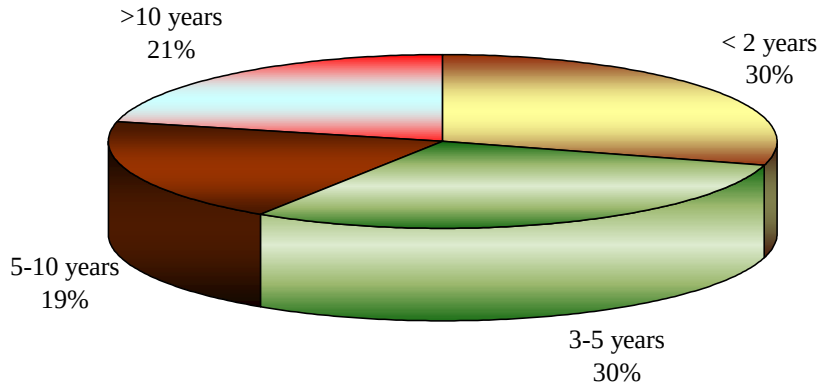
Table-6.17
Experience of users in research

Experience (Years)	Number	Percentage
< 2 years	226	29.58
3-5 years	227	29.71
5-10 years	148	19.37
>10 years	163	21.34
Total	**764**	**100.00**

From the Table-6.17 it can be seen that thirty percent of users had less than two years of teaching experience. Another thirty percent of users had 3 to 5 years of research experience. More than twenty one percent of users were more than ten years experience in research. Nearly one-fifth of users had 3-5 years of experience in research. It clearly indicates that a majority of users were

quite experienced in research as forty percent of the user community had an experience of more than five years. At the same time a greater majority of users (70.42%) possessed more than three years of experience.

Graph-6.14: Experience of users in research



A list of information services provided by the university libraries was provided and users were asked to indicate whether they have used the service or not. They were also asked to indicate why they haven't used the service. The reasons for non-use included non-requirement, unawareness, and service not provided by the library. Since the interest of the study focused on evaluation of information products and services, all the reasons for non-use were classified as Not Applicable. Table 6.18 and Table 6.20 provide details regarding use of information products and services.

Table-6.18
Use of Information services by the academic users

(N=764)

Information Service	Not Applicable	Used	Not used
Reference service	105 (13.74%)	551 (72.12%)	108 (14.14%)
Referral service	554 (72.51%)	72 (9.42%)	138 (18.06%)
Literature Search service	551 (72.12%)	121 (15.84%)	92 (12.04%)
CAS	438 (57.33%)	168 (21.99%)	158 (20.68%)
SDI	695 (90.97%)	26 (3.4%)	43 (5.63%)
Newspaper Clipping Service	376 (49.21%)	210 (27.49%)	178 (23.3%)
Abstracting service	764 (100%)	0	0
Data service	764 (100%)	0	0
Technical Enquiry service	741 (96.99%)	4 (0.52%)	19 (2.49%)
Translation Service	744 (97.38%)	1 (0.13%)	19 (2.49%)
Reprographic service	-	750 (98.17%)	14 (1.83%)
Inter Library Loan	308 (40.31%)	160 (20.94%)	296 (38.25%)
Document Delivery Service	404 (52.88%)	126 (16.49%)	234 (31.63%)
Bibliometric service	764 (100%)	00	00
Outreach services	748 (97.91%)	10 (1.31%)	6 (0.78%)

From Table-6.18 it can be observed that since no library was providing abstracting service, data service and bibliometric services, none of the users (N=764) were aware of such services. Of all the services provided by the libraries, reprographic service was the highly used service as more than ninety-eight percent of users have used it (N=750) while a very few haven't used it (N=14). Reference service was the second most widely used service as more than seventy-two percent had used it with 13.74% (N=105) were unaware and 14.14% in spite of being aware had not used it (N=108). Newspaper clipping service (N=210, 27.49%), Current Awareness Service (21.99%, N=168), Inter Library Loan (N=160, 20.94%), Document Delivery Service (N=126, 16.49%) and Literature Search Service (N=121, 15.84%) were the five other services used by a small but significant proportion of users.

Outreach services (N=10, 1.31%), technical enquiry service (N=4, 0.52%) and translation service (N=1, 0.13%) were the three other services used by very few, and unused but aware of these services were also very few. As such there were larger numbers of users who were unaware of these services. A significant proportion of user community in spite of being aware of Inter Library Loan (N=296, 38.25%), Document Delivery Service (N=234, 31.63%), Newspaper clipping service (N=178, 23.3%) and Current Awareness Service (N=158, 20.68%) had not used it yet. Referral (N=138, 18.06%) and Reference (N=108, 14.14%) services were the other two services where in many users in spite of being aware had never used these.

A greater majority of users were unaware of outreach service (N=748, 97.91%), translation service (N=744, 97.38%), technical enquiry service (N=741, 96.99%) and SDI service (N=695, 90.97%). Nearly three fourth of user community was unaware of referral (N=554, 72.51%) and Literature Search Service while nearly half of the user community was unaware of CAS (N=438, 57.33%), document delivery service (N=404, 52.88%) and newspaper clipping service (N=376, 49.21%). A very significant number of users were also unaware of Inter library loan service (N=308, 40.31%). It can also be interpreted that the numbers of users who were aware but not using referral service, SDI, technical enquiry service, translation service, inter library loan service and document delivery service was more compared to those who were using these services.

Table-6.19
Evaluation of Information Services by the academic user community

Information Service	Content Extent	Technical sophistication	Temporal aspects	Accuracy	Value	Quality	Search effort	Over all Rating
Reference service (N=551)	3.16 (3)	2.95 (4)	2.12 (7)	2.65 (7)	3.76 (6)	2.9 (6)	4.1 (2)	2.69 (7)
Referral service (N=72)	2.01 (7)	1.65 (10)	1.89 (10)	4.45 (2)	4.6 (2)	3.07 (3)	3.5 (4)	3.9 (2)
Literature Search service (N=121)	2.45 (6)	3.01 (2)	3.00 (2)	2.46 (8)	3.8 (5)	3.7 (2)	4.5 (1)	3.00 (5)
CAS (N=168)	2.8 (5)	2.8 (6)	2.8 (4)	3.2 (3)	2.5 (9)	2.5 (9)	1.00 (9)	2.00 (9)
SDI (N=26)	1.00 (10)	2.00 (7)	2.5 (6)	3.00 (4)	3.00 (7)	3.00 (4)	2.00 (6)	2.5 (8)
Newspaper Clipping Service (N=210)	1.00 (10)	1.00 (11)	1.00 (11)	1.00 (11)	1.00 (11)	1.00 (11)	1.00 (9)	1.00 (11)
Technical Enquiry service (N=4)	3.00 (4)	3.00 (3)	3.00 (2)	3.00 (4)	4.00 (4)	3.00 (4)	3.00 (5)	3.00 (5)
Translation Service (N=1)	2.00 (8)	2.00 (7)	2.00 (8)	2.00 (9)	2.00 (10)	2.00 (10)	2.00 (6)	2.00 (9)
Reprographic service (N=748)	4.00 (1)	3.15 (1)	3.05 (1)	3.00 (4)	3.00 (7)	2.6 (8)	1.00 (9)	3.5 (3)
Inter Library Loan (N=160)	2.00 (8)	2.00 (7)	2.00 (8)	1.45 (10)	4.85 (1)	2.65 (7)	2.00 (6)	3.1 (4)
Document Delivery Service (N=126)	3.19 (2)	2.85 (5)	2.8 (4)	4.95 (1)	4.5 (3)	4.2 (1)	3.6 (3)	4.00 (1)
Outreach services (N=10)	1.00 (10)	1.00 (11)	1.00 (11)	1.00 (11)	1.00 (11)	1.00 (11)	1.00 (9)	1.00 (11)

An effort was made to evaluate the information services used by the user community. 15 information services used by them were listed and users were asked to evaluate them on eight identified criteria on a five point scale. The identified criteria were content extent, technical sophistication, temporal aspect, quality and accuracy, value, editorial quality and effort required to search. Based on these overall quality was also measured. Highest weightage was given 5 points while the lowest was given 1 point as indicated below

1. Content Extent (Highly Comprehensive – 5 to very superficial- 1)

2. Technical sophistication (Very high – 5 to very low – 1)

3 Temporal aspects (Current – 5 to very old -1)

4. Quality and accuracy (Very high – 5 to very low -1)

5. Value (Very high – 5 to very low – 1)

6. Editorial quality (best – 5 to worst – 1)

7. Effort required to search (Too little – 5 to too high – 1)

8. Usefulness (highly useful – 5 to highly un-useful – 1)

Based on the rating by the user community mean value was calculated and it is found from table 6.19 that as far as content extent of the services are concerned, reprographic service stands at number one position with a mean value of 4.0 indicating the fact that the service is highly comprehensive in nature. Document delivery service with a mean value of 3.19, reference service with a mean value of 3.16 and technical enquiry service with 3.00 stand as 2nd, 3rd and 4th comprehensive services. Though technical enquiry service is at number 4, it should be taken into consideration that very countable number of users has used the service and they have rated the content extent reasonably high. Current Awareness service (mean: 2.8) and literature search service (mean: 2.45) occupy 5th and 6th positions. But the mean value suggests that these services stand at the midpoint in the 5 point scale. Referral service (mean: 2.01), translation service (mean: 2.00) and Inter library loan (mean: 2.00) occupy 7th and 8th positions. These three services are below average on the five point scale. SDI (mean: 1.00), newspaper clipping service (mean: 1.00) and outreach services (mean: 1.00) can be viewed as very poor as far as content extent is concerned.

Reprographic service with a mean value of 3.15 occupies the top position indicating high technical sophistication. Literature search service (mean: 3.01) and technical enquiry service (mean: 3.00) stand at second and third positions with high technical sophistication. Reference service (mean: 2.95), document delivery service (2.85) and Current awareness service (mean: 2.8) are the other three services that have a better mean value indicating towards high technical sophistication. Inter library loan (mean: 2.00), translation service (mean: 2.00), SDI (mean: 2.00) and referral service (mean: 1.65) have low technical sophistication. Outreach services (mean: 1.00) and newspaper clipping service (mean: 1.00) stand at the bottom of the table. The mean values indicate that these two services are very low as far as technical sophistication is concerned.

Reprographic service with a mean of 3.05 stands at the top even for temporal aspects is concerned. The mean value suggests that on a five point scale 3.05 can be viewed as 'not very current' but a better indication of currency. Literature search service and technical enquiry service (mean: 3.00) occupy second best current among the users who have used these sources. The mean values for Current Awareness Service (mean: 2.8), document delivery service (mean: 2.8) and SDI (mean: 2.6) indicate the fact that these are at the midpoint of currency neither too current are nor too old. Reference service with a mean of 2.12 and inter library loan with a mean of 2.00 and referral service with a mean of 1.8 seem to be old as far as temporal aspects are concerned. The mean values for outreach service (mean: 1.00) and newspaper clipping indicate the fact that these are too old with regard to temporal aspects.

With a mean value of 4.95 document delivery service is on top among all the services with regard to the accuracy level indicating highest accuracy followed by referral service with a mean value of 4.45. Current awareness (mean: 3.2), technical inquiry service (mean: 3.00), SDI (mean: 3.00) and reprographic service (mean: 3.00) also are better at accuracy level. Reference service (mean: 2.65) and literature search service (mean: 2.46) stand at the midpoint of accuracy indicating the fact that they are average in accuracy. Accuracy level of translation service (mean: 2.00) is poor. Accuracy level of inter library loan service (mean: 1.45), outreach services (mean: 1.00) and newspaper clipping service (mean: 1.00) are very poor.

Value for the inter library loan service seems to be too high among the users (mean: 4.85). Referral service (mean: 4.6) and document delivery service (mean: 4.5) are the other two services that also have high value among the user community. Mean values for technical inquiry service (mean: 4.00), literature search service (mean: 3.8) and reference service (mean: 3.76) indicate that they have better values among the users. SDI and reprographic service with a mean value of 3.00 stands at the midpoint of a significantly good value among the user community. Current Awareness Service (mean: 2.5) and translation services (mean: 2.00) have poor value while outreach service (mean: 1.00), and newspaper clipping (mean: 1.00) have a very poor value among the user community.

Document delivery service (mean: 4.2) occupy the top position amongst the services with regard to quality. Literature search service (mean: 3.7) is another service that is considered to be of good quality by the users. Referral service (mean: 3.07), SDI (mean: 3.00) and technical services (mean: 3.00), inter library loan service (mean: 2.65), reprographic service (mean: 2.6) and Current Awareness

Service (mean: 2.5) are the other services which also are considered to be of good quality. Translation service with a mean value of 2.00 is considered to be poor and outreach service (mean: 1.00) and newspaper clipping service (mean: 1.00) are considered to be very poor as far as quality is considered.

Efforts put to search or avail the service is another criteria considered for evaluation. It is observed that literature search service with a mean of 4.5 stands on top indicating to the fact that it no much effort is required to avail the service. Reference service is another one that could be availed with minimal search effort (mean: 4.1). Document delivery service (mean: 3.6), referral service (mean: 3.5) are the two other services rated by users as services requiring less search effort. Technical service (mean: 3.00) is the fifth service requiring least search effort. Mean values for Translation service (mean: 2.00), SDI (mean: 2.00) and Inter library loan (mean: 2.00) indicate that these services require search effort. Current awareness Service (mean: 1.00), Newspaper clipping (mean: 1.00) and outreach services (mean: 1.00), reprographic service (mean: 1.00) really require high search effort. As far as reprographic service is concerned, maybe there are very few photocopiers and as such time required to get their need satisfied is more.

Users were also asked to rate the services based on overall utility on a five point scale from highly useful to highly un-useful. It can be seen that document delivery service with a mean of 4.00 is ranked one among the 15 services. Referral service with a mean 3.9 and reprographic service with a mean of 3.5 occupy second and third highly useful services. Inter library loan (mean: 3.1), technical enquiry service (mean: 3.00) and literature service (mean: 3.00) can also be viewed as service users consider as useful. Mean values for

reference service (mean: 2.69) and SDI (mean: 2.5) indicate that these two services are moderately useful. Usefulness of Current Awareness Service (mean: 2.00) and translation services (mean: 2.00) is poor while outreach service (mean: 1.00) is highly un-useful.

Table-6.20
Use of Information products by the academic users.

(N=764)

Information Products	Not Applicable	Used	Not used
Question Bank	682 (89.27%)	52 (6.81%)	30 (3.92%)
Virtual Library Service	621 (81.28%)	79 (10.34%)	64 (8.38%)
Ask – A – Librarian	675 (88.35%)	42 (5.5%)	47 (6.15%)
Bulletin boards	764 (100%)	00	00
Web based user education	154 (20.16%)	516 (67.54%)	94 (22.3%)
Web forms	764 (100%)	00	00
Access to online databases	350 (45.81%)	322 (42.15%)	92 (22.04%)
FAQ	669 (87.57%)	16 (2.09%)	79 (10.34%)
Subject Gateways	488 (63.87%)	127 (16.62%)	149 (19.51%)
Library brochure	721 (94.37%)	20 (2.62%)	23 (3.01%)
Accession lists/ List of additions	585 (76.57%)	134 (17.54%)	45 (5.89%)
webOPAC	161 (21.07%)	571 (74.74%)	32 (4.19%)
Research in Progress	277 (36.26%)	314 (41.1%)	173 (22.64%)
ETD	274 (35.86%)	281 (36.78%)	209 (27.36%)
Link to e-books	122 (15.97%)	569 (74.48%)	73 (9.55%)
Link to e-journals	11 (1.44%)	644 (84.29%)	109 (14.27%)
Link to e-course wares	231 (30.24%)	365 (47.77%)	168 (21.99%)
Current awareness Bulletins	615 (80.5%)	45 (5.89%)	104 (14.06%)
Bibliographies	696 (91.1%)	22 (2.88%)	46 (6.02%)
Data sheets	737 (96.47%)	4 (0.52%)	23 (2.01%)
Handbooks/Manuals	760 (99.48%)	00	4 (0.52%)
Expert database	760 (99.48%)	00	4(0.52%)
State of the art reports	760 (99.48%)	00	4 (0.52%)
Trend reports	760 (99.48%)	00	4 (0.52%)
Technical digests	760 (99.48%)	00	4 (0.52%)
Translation pools	760 (99.48%)	00	4 (0.52%)
In-house journals	697 (91.23%)	40 (5.2%)	27 (3.57%)
E-Newsletters	669 (87.57%)	50(6.54%)	45 (5.89%)
Institutional Repository of the University	368 (48.17%)	265 (34.69)	131 (17.14%)
Reviews	740 (96.86%)	10 (1.31%)	14 (1.83%)
Trade literature bulletins	764 (100%)	00	00
Infographics	764 (100%)	00	00

A comprehensive list of information products was provided to the user community and users' were asked to indicate whether they have used these products (Table 6.20). It is seen from the table that no user was aware of bulletin boards, web forms, trade literature bulletins and infographics as none of the library has developed any such information products. A very few users in-spite of being aware (N=4) had not used the products like handbooks/manuals, expert databases, state of the art reports, trend reports, technical digests and translation pools. The remaining greater majority of user community (99.48%) was unaware of the products and as such not used them. Reviews (96.86%), data sheets (96.47%), library brochures (94.37%), in-house journals (91.23%) and bibliographies (91.1%) were the other major products not known to user community. A larger number of users were also unaware of question bank (89.27%), Ask-a-Librarian (88.35%), FAQ (87.57%), e-newsletters (87.57%), virtual library service (81.28%), Current Awareness Bulletins (80.5%) and Accession lists/List of additions (76.57%). Nearly two third of user community (63.87%) was unaware of subject gateways. More than two fifth of users were also unaware of institutional repositories of the universities (48.17%) and access to online databases (45.81%).

Among the 10.73% of users who were aware of question banks, only 6.81% of them had used the question banks (N=52). While 10.34% out of 18.72% users who were aware of virtual library services have used it, 6.15% of 11.65% users who are aware of Ask-A-Librarian have not used it. One fifth of users (N=154) were unaware of web based user education. Of the remaining four fifth of users, one fifth in-spite of being aware had not used the product (N=94).

Link to e-journals (84.29%, N=644), webOPAC (74.74%, N=571), link to e-books (74.48%, N=569) and web based user education (67.54%, N=516) were the four information products used by a large number of users. Link to e-coursewares (47.77%, N=365), access to online databases (42.15%, N=322), Research in progress (41.1%, N=314), ETD (36.78%, N=281) and Institutional Repositories of the Universities (34.69%, N=265) were the products used significantly by the users.

More than one-fifth of users' in-spite of being aware of access to online databases had not accessed the online databases (N=92, 22.04%). Of the 12.43% of users' who were aware of FAQ 10.34% of users had not used the facility. Of the 36.13% of users who had said they are aware of subject gateways, nearly one-fifth (N=149, 19.51%) had not used subject gateways while 16.62% had used the subject gateways. Among the very few who are aware (5.63%) of library brochures hardly 2.62% (N=20) had used the brochures. 17.54% of users' had used the accession lists/lists of additions while 5.89% in-spite of being aware of the product had not used.

More than one fifth of users were unaware of webOPACs while a small number of users who were aware of the product had not used webOPAC. From the table it can also be found that, a significant number of users were unaware of research in progress (36.26%, N=277), ETD (35.86%, N=274), and link to e-coursewares (30.24%, N=231). 15.97% of users were unaware of Link to e-books (N=122), while less than one tenth of users being aware had not used the links to e-books (9.55%, N=73).

Table-6.21
Evaluation of Information Products by the academic user community

Information Product	Content Extent	Technical sophistication	Temporal aspects	Accuracy	Value	Quality	Search effort	Over all Rating
Question Bank (N=52)	2.5 (15)	2.00 (18)	2.00 (22)	2.9 (13)	4.6 (1)	4.5 (2)	4.00 (6)	3.8 (4)
Virtual Library Service (N=79)	2.85 (11)	2.76 (11)	2.71 (15)	2.6 (20)	2.9 (11)	3.05 (9)	4.5 (3)	2.6 (17)
Ask – A – Librarian (N-42)	2.3 (16)	2.3 (17)	2.4 (21)	2.4 (21)	2.65 (18)	2.7 (13)	4.9 (1)	2.1 (20)
Web based user education (N=154)	3.25 (8)	4.4 (6)	3.75 (7)	3.9 (2)	3.7 (4)	3.65 (6)	3.95 (7)	3.8 (4)
Access to online databases (N=322)	4.45 (2)	4.51 (5)	4.6 (2)	4.6 (1)	4.5 (2)	4.8 (1)	3.9 (8)	3.85 (3)
FAQ (N=16)	3.85 (4)	3.75 (7)	3.4 (10)	3.4 (6)	2.9 (11)	3.56 (7)	2.00 (20)	3.9 (2)
Subject Gateways (N=127)	2.82 (12)	2.76 (11)	2.56 (19)	2.72 (18)	2.81 (14)	2.2 (18)	4.4 (4)	2.7 (16)
Library brochure (N=20)	2.6 (14)	2.5 (14)	2.5 (20)	3.3 (7)	3.2 (7)	2.7 (13)	2.9 (14)	3.2 (10)
Accession lists/ List of additions (N=134)	3.15 (9)	3.2 (9)	3.05 (12)	2.86 (15)	2.95 (9)	2.8 (12)	3.1 (11)	3.02 (13)
webOPAC (N=571)	4.6 (1)	3.2 (9)	4.4 (5)	3.1 (9)	2.95 (9)	3.25 (8)	4.05 (5)	3.8 (4)
Research in Progress	1.00 (21)	1.65 (22)	2.67 (17)	2.7 (19)	2.1 (21)	2.15 (19)	2.24 (16)	2.15 (19)
ETD (N=281)	2.1 (17)	4.7 (2)	3.7 (8)	3.1 (9)	2.6 (19)	2.9 (10)	2.65 (15)	2.96 (14)
Link to e-books (N=569)	3.4 (7)	2.00 (18)	3.95 (6)	2.85 (16)	3.3 (6)	2.7 (13)	3.2 (10)	3.34 (9)
Link to e-journals (N=644)	2.9 (10)	2.00 (18)	2.58 (18)	2.75 (17)	3.4 (5)	2.85 (11)	3.1 (11)	3.45 (7)
Link to e-coursewares (N=365)	4.2 (3)	2.00 (18)	4.7 (1)	3.6 (4)	4.1 (3)	2.3 (17)	3.04 (13)	2.4 (18)
Current awareness Bulletins (N=45)	1.9 (19)	2.69 (13)	2.8 (14)	2.9 (13)	2.8 (15)	3.3 (7)	2.2 (17)	2.76 (15)
Bibliographies (N=22)	1.00 (21)	4.6 (4)	2.7 (16)	1.7 (22)	2.06 (22)	1.2 (21)	1.1 (21)	1.00 (21)
Data sheets (N=4)	3.5 (6)	4.9 (1)	3.6 (9)	3.45 (5)	2.2 (20)	2.6 (16)	3.75 (9)	4.4 (1)
In-house journals (N=40)	3.81 (5)	2.51 (14)	4.5 (3)	3.2 (8)	2.7 (16)	4.4 (3)	2.05 (19)	3.1 (11)
E-Newsletters (N=50)	2.69 (13)	2.5 (16)	4.5 (3)	3.1 (9)	2.7 (16)	4.3 (4)	2.2 (17)	3.1 (11)
Institutional Repository of the University (N=265)	2.1 (17)	3.4 (8)	3.3 (11)	3.7 (3)	3.1 (8)	3.85 (5)	4.7 (2)	3.4 (8)
Reviews (N=10)	1.1 (20)	4.7 (2)	3.00 (13)	3.00 (12)	2.9 (11)	1.1 (22)	1.00 (21)	1.00 (21)

It is surprising to note that 14.27% of users (N=9) though aware had not used link to e-journals and a small group of users (1.44%, N-11) were unaware of it. A significant number of users though were aware had not used ETD (27.36%, N=209), Research in progress (22.64%, N=173), link to e-coursewares (21.99%, N= 168), Institutional repository of the university (17.14%, N=131) and Current Awareness Bulletins (14.06%, N= 104).

Information products used by the user community were also got evaluated by the user community. 22 information products used by them were listed and users were asked to evaluate them on eight already identified criteria on a five point scale. The identified criteria were the same i.e. content extent, technical sophistication, temporal aspect, quality and accuracy, value, editorial quality and effort required to search. Based on these overall quality was also measured. Highest weightage was given 5 points while the lowest was given 1 point as indicated below

1. Content Extent (Highly Comprehensive – 5 to very superficial- 1)
2. Technical sophistication (Very high – 5 to very low – 1)

3 Temporal aspects (Current – 5 to very old -1)

4. Quality and accuracy (Very high – 5 to very low -1)
5. Value (Very high – 5 to very low – 1)
6. Editorial quality (Best – 5 to worst – 1)
7. Effort required to search (Too little – 5 to too high – 1)
8. Usefulness (Highly useful – 5 to highly un-useful – 1)

Based on the rating by the user community mean value was calculated and it is found from table 6.21 the rankings of various used information products.

webOPAC's (mean: 4.6) stand on top with regard to content extent indicating the fact that they are highly comprehensive. Access to online databases with a mean of 4.45 and link to e-coursewares (mean: 4.2) occupy second and third position in this category indicating that these are comprehensive. FAQ (mean: 3.85), In-house journals (mean: 3.81), data sheets (mean: 3.5) are the other products whose content extent is perceived as better. Mean values for link to e-books, (mean: 3.4), web-based user education (mean: 3.25) and accession lists/ lists of additions (mean: 3.15) indicate that they are neither comprehensive nor superficial. Content extent for link to e-journals (mean: 2.9), virtual library (mean: 2.85), subject gateways (mean: 2.82), e-newsletters (mean: 2.69), library brochure (mean: 2.6) and question bank (mean: 2.5) is found to be selective as the mean values for them ranges between 2.5 and 2.9. Products like Ask-a-Librarian (mean: 2.3), ETD (mean: 2.1) and Institutional Repositories of the universities look superficial as far as context extent is concerned. The remaining products – current awareness bulletins (mean: 1.9), reviews (mean: 1.1), bibliographies (mean: 1.00) and research in progress (mean: 1.00) are rated by users under study as highly superficial in nature.

Data sheets are ranked on top by the users who have used them with regard to technical sophistication (mean: 4.9). Reviews (mean: 4.7), and ETD (mean: 4.7) are the other two products which are considered to be very high in technical sophistication. Technical sophistication in the bibliographies (mean: 4.6), on-line databases access (mean: 4.51) and web based user education tools (mean: 4.4) made the users to rank them number 4, 5 and 6 in the list. Of course one should consider the fact that very few people have made use of these

products and they are satisfied. Other products which the user community appreciates for their technical sophistication include FAQ (mean: 3.75), institutional repositories (mean: 3.4), accession lists/list of additions (mean: 3.2) and webOPAC (mean: 3.2). The mean value for the products like subject gateways (mean: 2.76), virtual library (mean: 2.76), current awareness bulletin (mean: 2.69), in-house journals (mean: 2.51), library brochure (mean: 2.5) and e-newsletters (mean: 2.5) are moderate poor in technical sophistication. Ask-A-Librarian (mean: 2.3), question banks (mean: 2.00), link to-e-books (mean: 2.00), link to e-journals (mean: 2.00), link to e-coursewares (mean: 2.00) and research in progress (mean: 1.65) have been rated as very poor in technical sophistication.

User community has rated link to e-coursewares (mean: 4.7), access to online databases (mean: 4.6), as the top two products as highly current sources. In-house journals (mean: 4.5) and e-newsletters (mean: 4.5) have been rated as third highly current products along with webOPACs (mean: 4.4) which are ranked fourth. Link to e-books (mean: 3.95) and web based user education (mean: 3.75), ETD (mean: 3.7) and data sheets (mean: 3.6), are the other three products which have been rated as current. Users consider FAQ (mean: 3.4), institutional repository (mean: 3.3), accession lists/list of additions (mean: 3.05) and reviews (mean: 3.00) as moderately current. Current awareness bulletins (mean: 2.8), virtual library (2.71), bibliographies (mean: 2.7), research in progress (mean: 2.67), link to e – journals (mean: 2.58), subject gateways (mean: 2.56), library brochures (mean: 2.5) have been considered by them as old. Ask-a-Librarian (mean: 2.4) and question banks (mean: 2.00) have been viewed by them as very old.

As far as question of accuracy is considered access to online databases stand tall with a mean value of 4.6 followed by web based user education (mean: 3.9), institutional repositories (mean: 3.7) and link to e-coursewares (mean: 3.6). Data sheets (mean: 3.45), FAQ (mean: 3.4), library brochure (mean: 3.3), in-house journals (mean: 3.2), e-newsletters (mean: 3.1), ETD (mean: 3.1), webOPAC (mean: 3.1) and reviews (mean: 3.00) have been rated by the users as moderately accurate. Question banks (mean: 2.9), current awareness bulletins (mean: 2.9), accession lists/ list of additions (mean: 2.86), link to e-books (mean: 2.85), link to e-journals (mean: 2.75), subject gateways (mean: 2.72), research in progress (mean: 2.7) and virtual library (mean: 2.6) have been rated as inaccurate. The mean values for the products Ask-a-Librarian (mean: 2.4) and bibliographies (mean: 1.72) indicate that they are highly inaccurate.

User community assigns highest value to the question banks (mean: 4.6) followed by online databases (mean: 4.5). Link to e-coursewares (mean: 4.1) and web based user education (mean: 3.7) have been considered as sources of higher value. Link to e-journals (mean: 3.4), link to e-books (mean: 3.3), library brochure (mean: 3.2) and institutional repositories (mean: 3.1) have been rated by users as products of high value. webOPAC (mean: 2.95), Accession lists (mean: 2.95), reviews (mean: 2.9), virtual library mean: 2.9), FAQ (mean: 2.9), subject gateways (mean: 2.81), current awareness bulletins (mean: 2.8), in-house journals (mean: 2.7), e-newsletters (mean: 2.7), Ask-a-Librarian (mean: 2.65) and ETD (mean: 2.6) have been considered by users as less valued products. Data sheets (mean: 2.2), research in progress (mean: 2.1) and bibliographies have been viewed by them as least valued products.

Users have rated the access to online databases on top of the products list with a mean value of 4.8 with regard to editorial quality followed by question banks (mean: 4.5). Editorial quality of in-house journals (mean: 4.4), e-newsletters (mean: 4.3) has been very good according to the ratings by the user community. The editorial quality of institutional repositories (mean: 3.85), web based user education (mean: 3.65) and FAQ (mean: 3.56) have been rated as good. Mean values for current awareness bulletins (mean: 3.3), webOPAC (mean: 3.25) and virtual library (mean: 3.05) indicate that they are more than average in editorial quality. Users consider the editorial qualities of ETD (mean: 2.9), link to e-journals (mean: 2.85), accession lists (mean: 2.8), Ask-a-Librarian (mean: 2.7), library brochure (mean: 2.7), link to e-books (mean: 2.7) and data sheets (mean: 2.6) as poor. The editorial quality of link to e-coursewares (mean: 2.3), subject gateways (mean: 2.2), research in progress (mean: 2.15) poorer while the editorial quality of products like bibliographies (mean: 1.2) and reviews (mean: 1.1) have been rated as very poor.

Users felt that to search Ask-a-Librarian (mean: 4.9) they have put very least efforts. Institutional repositories (mean: 4.7) and virtual library (mean: 4.5) are the other two products which users also felt that they have put very least efforts. Subject gateways (mean: 4.4), webOPAC (mean: 4.05) and question banks (mean: 4.00) are the other products that the users claim that to some extent they had to put efforts in searching. Users also felt that they had to put little efforts in searching web based user education (mean: 3.95), access to online databases (mean: 3.9) and data sheets (mean: 3.75). According to the users' ratings link to e-books (mean: 3.2), accession lists/list of additions (mean: 3.1), link to e-journals (mean: 3.1), link to e-coursewares (mean: 3.04),

require considerable search efforts. Searching library brochure (mean: 2.9) and ETD (mean: 2.65) require more search efforts while significantly more search efforts were needed to search research in progress (mean: 2.24), current awareness bulletins (mean: 2.2), e-newsletters (mean: 2.2), in-house journals (mean: 2.05) and FAQ (mean: 2.00) require high search efforts. Bibliographies (mean: 1.1) and reviews (mean: 1.00) require very high search efforts.

As far as overall usefulness is concerned, users though very few have rated datasheets as the most highly useful products (mean: 4.4). FAQ (mean: 3.9), access to online databases (3.85), question banks (mean: 3.8), web based user education (mean: 3.8) and webOPACs (mean: 3.8) are considered as very useful products. Link to e-journals (mean: 3.45), institutional repositories (mean: 3.4), library brochure (mean: 3.2), in-house journals (mean: 3.1), e-newsletters (mean: 3.1) and accession lists/ list of additions (mean: 3.02) have been identified by the users as useful products. Users have rated ETD (mean: 2.96), current awareness bulletins (mean: 2.76), subject gateways (mean: 2.7) and virtual library (mean: 2.6) as moderately useful products. Link to e-coursewares (mean: 2.4), research in progress (mean: 2.15), Ask-a-Librarian (mean: 2.1) have been considered as less useful while bibliographies (mean: 1.00) and reviews (mean: 1.00) have been rated as least useful products.

It can be observed from this table that few products have been rated quite high in some criteria while they have been rated very low in other parameters. At the same time the user community has viewed the overall usefulness of these products quite differently.

6.3 Conclusions:

The data elicited from the university websites and user community has revealed many positive and negative aspects of information products and services. In the next chapter the findings will be summarized.

CHAPTER-7
SUMMARY OF FINDINGS AND CONCLUSIONS

7.1 Introduction:

Summary of findings are provided in this chapter followed by suggestions and areas of further research.

7.2 Summary of findings:

7.2.1 General Characteristics:

- 51 universities (State, Central, deemed to be and private) and institutions of national repute which were in existence as on 22/10/2015 were considered for the present study.
- More than half of the universities were established between 1981 and 2010.
- Around 7.84% (4) universities are established between 1900 and 1960 which can be identified as too old.
- Nearly half of the universities under study were state universities while more than a quarter of the study population are deemed to be universities.
- A larger number of universities were not accredited though more than half of the universities (N=26, 50.98%) were accredited
- Among those which are accredited more than one third (N=18, 18.35%) are accredited with 'A'.
- Validity of NAAC accreditation of a large number of universities expires in 2021
- All the universities have their websites.
- Nearly three fourth of the universities have (N=36, 70.59%) library website as part of the university website, only 15.69% (N=8) of the libraries have independent websites.

7.2.2 Information Services:

- ✦ All the universities under study provide reprographic service (N=44, 100%) in their libraries. 81.82% (N=36) of them provide reference service, 56.82% (N=25) provide inter library loan, 47.73% (N=21) provide newspaper clipping service.
- ✦ Only four (9.10%) university libraries provide selective dissemination of information service and the services like technical enquiry service, translation service and outreach service are provided by one (2.22%) library each.
- ✦ Services like abstracting, data service and bibliometric service are not provided by any of the university libraries of Karnataka.
- ✦ More than three fourth (N=34) of university libraries are providing web based user education in their libraries and 43.18% (N=19) of the university libraries provide access to online databases. 29.55% (N=13) provide subject gateways, 13.64% (N=6) provide virtual library services, 9.1% (N=4) provide ask-a-librarian service, 6.82% (N=3) provide FAQ.
- ✦ Many of the innovative web-enabled services are yet to be introduced by the University libraries.

7.2.3 Information Products:

- ❖ Majority of the university libraries (N=37, 84.10%) provide link to e-journals, 81.82% (N=36) provide link to e-books, two third (N=31, 70.45%) of the university libraries provide web OPAC and 68.18% (N=30) provides link to e-courseware.

- ❖ More than half of the university libraries (N=25, 56.82%) provide database of experts and ETD, 40.91% (N=18) provide institutional repositories of the universities.
- ❖ Many web enabled services like providing datasheets, handbook/manuals, expert database, state of the art reports, trend reports, technical digests, translation pools and trade literature bulletins are not provided by any of the university libraries.

7.2.4 Social Media:

- ➢ More than half of the university libraries (N=23, 52.27%) do not use social media.
- ➢ 47.73% (N=21) universities are connected to twitter, and 45.45% (N=20) of them are connected to Face Book, 31.82% (N=14) are connected to Youtube and here they upload the educational videos of their universities.

7.2.5 Mobile based library services:

- A very few university libraries (9.10%, N=4) provide mobile based LI services.
- SMS alert (N=4, 9.10%) is the only method used to provide LI service through different university libraries.

7.2.6 Pricing of LIS services and products:

- None of the university libraries charge money for providing the mobile based services. It is provided free of cost.

7.3 User Evaluation:

7.3.1 Characteristics of Users under survey:

- ❖ 764 users were surveyed to get the information products and services evaluated by them.

- Nearly three fourth of them were research scholars while the other one-fourth of the study population was involved in teaching.
- Nearly three fourth study population comprises of post-graduates (73.82%, N=564)
- A majority of users are quite experienced in teaching as well as research

7.3.2 Use of Information services:

- Since no library is providing abstracting service, data service and bibliometric services, none of the users (N=764) are aware of such services.
- Of all the services provided by the libraries, reprographic service is the highly used service as more than ninety-eight percent of users have used it (N=750).
- Reference service is the second most widely used service as more than seventy-two percent had used it.
- News paper clipping service (N=210, 27.49%), Current Awareness Service (21.99%, N=168), Inter Library Loan (N=20.94%), Document Delivery Service (N=126, 16.49%) and Literature Search Service (N=121, 15.84%) are the five services used by a small but significant proportion of users.
- Outreach services (N=10, 1.31%), technical enquiry service (N=4, 0.52%) and translation service (N=1, 0.13%) are the three other services used be very few.
- A significant proportion of user community in spite of being aware of Inter Library Loan (N=296, 38.25%), Document Delivery Service (N=234, 31.63%), Newspaper clipping service (N=178, 23.3%) and Current Awareness Service (N=158, 20.68%) have not used it yet.

- A greater majority of users are unaware of outreach service (N=748, 97.91%), translation service (N=744, 97.38%), technical enquiry service (N=741, 96.99%) and SDI service (N=695, 90.97%).
- Nearly three fourth of user community is unaware of referral (N=554, 72.51%) and Literature Search Service while nearly half of the user community is unaware of CAS (N=438, 57.33%), document delivery service (N=404, 52.88%) and news paper clipping service (N=376, 49.21%).
- The reasons for non-use include non-requirement, unawareness, and service not provided by the library.
- Since no library is providing abstracting service, data service and bibliometric services, none of the users (N=764) are aware of such services.

7.3.3 Evaluation of information Services:

- Information services were evaluated on eight identified criteria on a five point scale. The identified criteria were content extent, technical sophistication, temporal aspect, quality and accuracy, value, editorial quality and effort required to search. Based on these overall quality was also measured. Highest weightage was given 5 points while the lowest was given 1 point.
- As far as content extent of the services are concerned, reprographic service stands at number one position with a mean value of 4.0 indicating the fact that the service is highly comprehensive service.
- Document delivery service with a mean value of 3.19, reference service with a mean value of 3.16 and technical enquiry service stand at 2nd, 3rd and 4th comprehensive services.

- SDI (mean: 1.00), newspaper clipping service (mean: 1.00) and outreach services (mean: 1.00) can be viewed as very poor as far as content extent is concerned.
- Reprographic service with a mean value of 3.15 occupies the top position indicating high technical sophistication.
- Literature search service (mean: 3.01) and technical enquiry service (mean: 3.00) stand at second and third positions with high technical sophistication.
- Outreach services (mean: 1.00) and newspaper clipping service (mean: 1.00) are the two services which are considered as very low as far as technical sophistication is concerned.
- Reprographic service with a mean of 3.05 stands at the top even for temporal aspects is concerned.
- Literature search service and technical enquiry service (mean: 3.00) occupy second best current among the users who have used these sources.
- The mean values for outreach service (mean: 1.00) and newspaper clipping (mean: 1.00) indicate the fact that these are too old with regard to temporal aspects.
- With a mean value of 4.95 document delivery service is on top among all the services with regard to the accuracy level indicating highest accuracy followed by referral service with a mean value of 4.45.
- Accuracy level of interlibrary loan service (mean: 1.45), Outreach services (mean: 1.00) and newspaper clipping service (mean: 1.00) are very poor.
- Value for the inter library loan service seems to be too high among the users (mean: 4.85).

- Referral service (mean: 4.6) and document delivery service (mean: 4.5) are the other two services that also have high value among the user community.
- Outreach service (mean: 1.00), and newspaper clipping (mean: 1.00) have a very poor value among the user community.
- Document delivery service (mean: 4.2) occupy the top position amongst the services with regard to quality.
- Literature search service (mean: 3.7) is another service that is considered to be of good quality by the users.
- Translation service with a mean value of 2.00 is considered to be poor and outreach service (mean: 1.00) and newspaper clipping service are considered to be very poor as far as quality is considered.
- Literature search service with a mean of 4.5 stands on top indicating to the fact that no much effort is required to avail the service.
- Reference service is another one that could be availed with minimal search effort (mean: 4.1).
- Current awareness (Mean: 1.00), Newspaper clipping (mean: 1.00) and outreach services (mean: 1.00), reprographic service (mean: 1.00) really require high search effort.
- Document delivery service with a mean of 4.00 is ranked one among the 15 services.
- Referral service with a mean 3.9 and reprographic service with a mean of 3.5occupy second and third highly useful services.
- Usefulness of Current awareness service (mean: 2.00) and translation services (mean: 2.00) is poor while outreach service (mean: 1.00) is highly un-useful.

7.3.4 Use of Information Products:

- No user is aware of bulletin boards, web forms, trade literature bulletins and infographics as none of the library has developed any such information products.
- Very few users in spite of being aware (N=4) have not used the products like handbooks/manuals, expert databases, state of the art reports, trend reports, technical digests and translation pools.
- Greater majority of user community (99.48%) is unaware of the products and as such not used them.
- Reviews (96.86%), data sheets (96.47%), library brochures (94.37%), in-house journals (91.23%) and bibliographies (91.1%) are the other major products not known to user community.
- A larger number of users are also unaware of question bank (89.27%), Ask-a-Librarian (88.35%), FAQ (87.57%), e-newsletters (87.57%), virtual library service (81.28%), Current Awareness Bulletins (80.5%) and Accession lists/List of additions (76.57%).
- Nearly two third of user community (63.87%) is unaware of subject gateways. More than two fifth of users are also unaware of institutional repositories of the universities (48.17%) and access to online databases (45.81%).
- Of the remaining four fifth of users, one fifth in spite of being aware have not used the product (N=94).
- Link to e-journals (84.29%, N=644), webOPAC (74.74%, N=571), link to e-books (74.48%, N=569) and web based user education (67.54%, N=N=516) are the four information products used by a large number of users.

7.3.5 Evaluation of information products:

- Information products used by the user community were got evaluated by the user community on eight already identified criteria on a five point scale.
- webOPAC's (mean: 4.6) stand on top with regard to content extent indicating the fact that they are highly comprehensive.
- Access to online databases with a mean of 4.45 and link to e-course wares (mean: 4.2) occupy second and third position in this category indicating that these are comprehensive.
- Current awareness Bulletins (mean: 1.9), reviews (mean: 1.1), bibliographies (mean: 1.00) and Research in Progress (mean: 1.00) are rated by users under study as highly superficial in nature.
- Data sheets are ranked on top by the users who have used them with regard to technical sophistication (mean: 4.9).
- Reviews (mean: 4.7), and ETD (mean: 4.7) are the other two products which are considered to be very high in technical sophistication.
- Research in Progress (mean: 1.65) has been rated as very poor in technical sophistication.
- User community has rated link to e-coursewares (mean: 4.7), access to online databases (mean: 4.6), as the top two products as highly current sources.
- Ask-A-Librarian (mean: 2.4) and Question banks (mean: 2.00) have been viewed by them as very old.
- Access to online databases stand tall with a mean value of 4.6 followed with regard to quality

- ❖ The mean values for the products Ask-A-Librarian (mean: 2.4) and bibliographies (mean: 1.72) indicate that they are highly inaccurate.
- ❖ User community assigns highest value to the question banks (mean: 4.6 followed by online databases (mean: 4.5).
- ❖ Data sheets (mean: 2.2), Research in Progress (mean: 2.1) and bibliographies have been viewed by them as least valued products.
- ❖ Users have rated the access to online databases on top of the products list with a mean value of 4.8 with regard to editorial quality followed by question banks (mean: 4.5).
- ❖ The editorial quality of products like bibliographies (mean: 1.2) and reviews (mean: 1.1) have been rated as very poor.
- ❖ Users felt that to search Ask-A-Librarian (mean: 4.9) they have put very least effort.
- ❖ Bibliographies (mean: 1.1) and reviews (mean: 1.00) require very high search efforts.
- ❖ FAQ (mean: 3.9), Access to online databases (3.85), Question banks (mean: 3.8), web based user education (mean: 3.8) and webOPACs (mean: 3.8) are considered as very useful products.
- ❖ Bibliographies (mean: 1.00) and reviews (mean: 1.00) have been rated as least useful products.

7.4 Suggestions:

7.4.1 Authorities point of view:

- ✦ The authorities of the Universities should realize that information products and services are very important for the institutions and they are needed to be provided to the user community.

- ✦ In the digital environment the authorities should encourage the LIS professionals to develop information products and services which are required by the user community to promote academic and research culture.
- ✦ Sufficient funding has to be provided by them to enable their design, continuous improvement and use.
- ✦ The authorities need to set up an Information Analysis and Product Design Centre to cope with the user requirements.

7.4.2 LIS Professionals point of view:

- They have to analyze the user needs and develop demand justified information products and services.
- They have to associate themselves with the subject experts and come out with such products and services.
- It shall also be their responsibility to monitor the use of these products and services on digital platforms.
- They must insist on comprehensive reflection of such products and services in the University websites. If the products get reflected in the websites properly then only the use will optimize.
- The LIS staffs have to take necessary measures to get the products and services evaluated by the user community based on the parameters which are relevant from the users' point of view.
- The LIS staff have to monitor how these are presented in other major university websites and adopt the suitable strategy in the development of need justified products and services.
- LIS staff have to create awareness among user community on the availability and use of information products and services
- They must evolve evaluation criteria on the lines of users' expectations.

7.4.3 Users point of view:

- Users must participate in the user awareness, assessment programmes conducted by the libraries.
- They must visit the websites regularly and give their feedback to the library staff
- They have to evaluate the products and services objectively so as to enable the library staff to improve the products.

7.5 Areas of Further Research:

- Evaluation of information products and services from the marketing point of view
- Evaluation of information products and services of a specific institution
- Evaluation of specific information products/services in different types institutions

7.6 Conclusions:

Concept of evaluation of information products has not received the importance it should have in the knowledge society characterized by digital availability. In the last five decades the concept has undergone revolutionary changes and as such evaluation parameters changed. The information products and services designed in the libraries are now being compared with that of corporate products. Hence, the angles from which they are being looked at are also changing. In this context the present study has thrown light on the evaluation of information products and services of institutions of higher learning. The study has shown that though websites have reflected the available products and services on line, their design needs to be improved. Few products have been rated quite high in some criteria while they have been rated very low in other parameters. This certainly calls for further investigation into the matter.

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APPENDIX-I

WORKSHEET USED TO ELICIT DATA FROM UNIVERSITY WEBSITES
NAME OF THE UNIVERSITY

1. Year of establishment:
2. Is the University? : [1] Central [2] State [3] Private [4] Deemed
3. Whether accredited by : [1] NAAC [2] ICAR [3] NBA [4] Any other(IACBE)
4. Accreditation status :
5. Validity of the accreditation:
6. University Website: [1] Yes [2] No
7. Whether the University library website is: [1] Independent [2] Part of University website [3] Any other (Specify....)
8. Indicate the LI services provided by the university library
   - 8.1. Reference service [1] Yes [2] No
   - 8.2. Referral service [1] Yes [2] No
   - 8.3. Literature search service [1] Yes [2] No
   - 8.4. CAS [1] Yes [2] No
   - 8.5. SDI [1] Yes [2] No
   - 8.6. Newspaper Clipping service [1] Yes [2] No
   - 8.7. Abstracting service [1] Yes [2] No
   - 8.8. Data service [1] Yes [2] No
   - 8.9. Technical Enquiry service [1] Yes [2] No
   - 8.10. Translation Service [1] Yes [2] No
   - 8.11. Reprographic service [1] Yes [2] No
   - 8.12. Inter Library Loan Service [1] Yes [2] No
   - 8.13. Document Delivery Service [1] Yes [2] No
   - 8.14. Bibliometric service [1] Yes [2] No
   - 8.15. Outreach services [1] Yes [2] No
9. Indicate the web enabled services provided by the library
   - 9.1. Virtual Library Service [1] Yes [2] No
   - 9.2. Ask – A – Librarian [1] Yes [2] No
   - 9.3. Bulletin boards [1] Yes [2] No
   - 9.4. Web based user education [1] Yes [2] No
   - 9.5. Web forms [1] Yes [2] No
   - 9.6. Access to online databases [1] Yes [2] No
   - 9.7. FAQ [1] Yes [2] No
   - 9.8. Subject Gateways [1] Yes [2] No
10. Indicate the information products indigenously developed by the University library
    - 10.1. Library brochure [1] Yes [2] No
    - 10.2. Accession lists/ List of additions [1] Yes [2] No
    - 10.3. webOPAC [1] Yes [2] No

10.4. Database of experts [1] Yes [2] No
10.5. ETD [1] Yes [2] No
10.6. Link to e-books [1] Yes [2] No
10.7. Link to e-journals [1] Yes [2] No
10.8. Link to e-coursewares [1] Yes [2] No
10.9. Current awareness Bulletins [1] Yes [2] No
10.10. Bibliographies [1] Yes [2] No
10.11. Data sheets [1] Yes [2] No
10.12. Handbooks/Manuals [1] Yes [2] No
10.13. Expert database [1] Yes [2] No
10.14. State of the art reports [1] Yes [2] No
10.15. Trend reports [1] Yes [2] No
10.16. Technical digests [1] Yes [2] No
10.17. Translation pools [1] Yes [2] No
10.18. In-house journals [1] Yes [2] No
10.19. E-Newsletters [1] Yes [2] No
10.20. Institutional Repository of the University [1] Yes [2] No
10.21. Reviews [1] Yes [2] No
10.22. Trade literature bulletins [1] Yes [2] No
10.23. Infographics [1] Yes [2] No

11. Whether the library is providing social media based services [ ] Yes [ ] No
12. If Yes, with which social media services are being provided
    12.1. FaceBook [1] Yes [2] No
    12.2. Twitter [1] Yes [2] No
    12.3. Google [1] Yes [2] No
    12.4. YouTube [1] Yes [2] No
    12.5. Pinterest [1] Yes [2] No
    12.6. Linked-in [1] Yes [2] No
    12.7. Flickr [1] Yes [2] No
    12.8. Instagram [1] Yes [2] No
    12.9. Any other (Specify) [1] Yes [2] No

13. Whether the library is providing any mobile based services [ ] Yes [ ] No
14. If Yes, provide details
    14.1. Using Whatsapp [1] Yes [2] No
    14.2. By developing app for the library [1] Yes [2] No
    14.3. SMS Alert [1] Yes [2] No
15. Are the LI services and products priced [ ] Yes [ ] No
16. If yes provide details

APPENDIX-II

QUESTIONNAIRE USED FOR THE SURVEYING THE USERS

1. Designation: [1] Research Scholar [2] Teaching Faculty
2. Qualification: [1] PG [2] PhD [3] PDF
3. Research experience (In years): [1] Less than 2yrs [2] 3yrs-5yrs
   [3] 5yrs – 10yrs [4] Above 10 yrs
4. Have you used the following information services and products
   a. Reference service Yes-1, No-2, NA-0
   b. Referral service Yes-1, No-2, NA-0
   c. Literature search service Yes-1, No-2, NA-0
   d. CAS Yes-1, No-2, NA-0
   e. SDI Yes-1, No-2, NA-0
   f. Newspaper Clipping service Yes-1, No-2, NA-0
   g. Abstracting service Yes-1, No-2, NA-0
   h. Data service Yes-1, No-2, NA-0
   i. Technical Enquiry service Yes-1, No-2, NA-0
   j. Translation Service Yes-1, No-2, NA-0
   k. Reprographic service Yes-1, No-2, NA-0
   l. Inter Library Loan Yes-1, No-2, NA-0
   m. Document Delivery Service Yes-1, No-2, NA-0
   n. Bibliometric service Yes-1, No-2, NA-0
   o. Outreach services Yes-1, No-2, NA-0
   p. Question Bank Yes-1, No-2, NA-0
   q. Virtual Library Service Yes-1, No-2, NA-0
   r. Ask – A – Librarian Yes-1, No-2, NA-0
   s. Bulletin boards Yes-1, No-2, NA-0
   t. Web based user education Yes-1, No-2, NA-0
   u. Web forms Yes-1, No-2, NA-0
   v. Access to online databases Yes-1, No-2, NA-0
   w. FAQ Yes-1, No-2, NA-0
   x. Subject Gateways Yes-1, No-2, NA-0
   y. Library brochure Yes-1, No-2, NA-0
   z. Accession lists/ List of additions Yes-1, No-2, NA-0
   aa. webOPAC Yes-1, No-2, NA-0
   bb. Research – in – progress Yes-1, No-2, NA-0
   cc. ETD Yes-1, No-2, NA-0
   dd. Link to e-books Yes-1, No-2, NA-0
   ee. Link to e-journals Yes-1, No-2, NA-0
   ff. Link to e-coursewares Yes-1, No-2, NA-0
   gg. Current awareness Bulletins Yes-1, No-2, NA-0
   hh. Bibliographies Yes-1, No-2, NA-0

ii. Data sheets Yes-1, No-2, NA-0
jj. Handbooks/Manuals Yes-1, No-2, NA-0
kk. Expert database Yes-1, No-2, NA-0
ll. State of the art reports Yes-1, No-2, NA-0
mm. Trend reports Yes-1, No-2, NA-0
nn. Technical digests Yes-1, No-2, NA-0
oo. Translation pools Yes-1, No-2, NA-0
pp. In-house journals Yes-1, No-2, NA-0
qq. E-Newsletters Yes-1, No-2, NA-0
rr. Institutional Repository of the University Yes-1, No-2, NA-0
ss. Reviews Yes-1, No-2, NA-0
tt. Trade literature bulletins Yes-1, No-2, NA-0
uu. Infographics Yes-1, No-2, NA-0

If in Q4 code 1 is given then give coding to Q5

5. If you have used the services and products kindly evaluate them

No	**Services & products**	**Evaluation criteria**							**Overall Remark**
		1	**2**	**3**	**4**	**5**	**6**	**7**	
a)	Reference service								
b)	Referral service								
c)	Literature search service								
d)	CAS								
e)	SDI								
f)	Newspaper Clipping service								
g)	Abstracting service								
h)	Data service								
i)	Technical Enquiry service								
j)	Translation Service								
k)	Reprographic service								
l)	Inter Library Loan								
m)	Document Delivery Service								
n)	Bibliometric service								
o)	Outreach services								
p)	Question Bank								
q)	Virtual Library Service								
r)	Ask – A – Librarian								
s)	Bulletin boards								
t)	Web based user education								
u)	Web forms								
v)	Access to online databases								
w)	FAQ								
x)	Subject Gateways								
y)	Library brochure								
z)	Accession lists/ List of additions								
aa)	webOPAC								
bb)	Research – in - progress								

cc)	ETD								
dd)	Link to e-books								
ee)	Link to e-journals								
ff)	Link to e-coursewares								
gg)	Current awareness Bulletins								
hh)	Bibliographies								
ii)	Data sheets								
jj)	Handbooks/Manuals								
kk)	Expert database								
ll)	State of the art reports								
mm)	Trend reports								
nn)	Technical digests								
oo)	Translation pools								
pp)	In-house journals								
qq)	E-Newsletters								
rr)	Institutional Repository of the University								
ss)	Reviews								
tt)	Trade literature bulletins								
uu)	Infographics								

Evaluation Criteria:

1. **Content Extent:** Highly Comprehensive, Comprehensive, Less intensified, Superficial (5 is highly comprehensive and 1 is least comprehensive)
2. **Technical sophistication:** Very high, high, average, low, very low (5 is very high and 1 is very low)
3. **Temporal aspect:** Current or retrospective (5 is highly current and 1 is highly retrospective)
4. **Quality and accuracy:** Very high to very low (5 is very high and 1 is very low)
5. **Value:** Very high to very low (5 is very high and 1 is very low)
6. **Editorial quality:** best to worst (5 is best and 1 is worst)
7. **Effort required to search:** Too little to too high (5 is very easy and 1 is very difficult)
8. **Overall remark:** Highly useful to Highly un-useful (5 is highly useful and 1 is very un-useful)

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Use of Online Social Networking Services in University Libraries: A Study of University Libraries of Karnataka, India

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ABSTRACT

Social networking services have become a very powerful tool to provide library services. Over a period of time libraries are using online social networking services to make their services popular and user friendly. Social networking services like facebook, youtube, twitter, linkedin, google+, instagram have many applications that could be utilised by the libraries to provide number of services in libraries. The paper reports the use of social networking services in University libraries, based on a study of 54 university websites in Karnataka state. Method of content analysis has been adopted to study the websites. The results indicate that 53 of 54 universities (98.14%) do have their own websites in different domains. 29.62% State/Central universities are connected to Facebook. 18.51% are connected to Youtube. Very few are connected to Twitter and Linkedin.18.51% of Universities are connected to different networking sites. It is observed that the universities libraries in the state are catching up with these technologies but many of these services are used for mere elementary purposes. The study concludes that it is time for the university libraries to exploit the services and use the optimum potentialities of these Social networking services.

Keywords: Social networking services, university libraries, Karnataka, India

1. INTRODUCTION

Social networking service has emerged as a powerful form for providing library services. Because of the very nature of online social networking services, academic libraries can adopt these tools in many ways to provide innovative services. Social networking services like facebook, youtube, twitter, linkedin, google+, instagram have many applications that could be utilised by the libraries to provide number of services[1]. These may be used to reach a new audience of potential users and provide quick updates to users and build discussion groups and collaborative work. These may also be used to market specific programs, products and services, push library news and press release, modernise the library image and reputation. These can be used for outreach activities through onward sharing, well beyond the institution itself, helping build connections and reputation more broadly.

Uses of social networking services include developing library resources, connecting staff with users, searching library catalogues and other online resources, providing user education, creating awareness of library resources, connecting with other librarians and library staff, getting feedback on library and its' services, etc. Online social networking service enables the academic library to pursue its mission and goals online, while promoting library resources and services.

Many studies have been reported on the use of online social networking services in the academic libraries environment. Clyde[2] reported that during 1990's public and academic libraries used blogs and during 2000's the situation varies as significant difference is observed from country to country. O'Reilly[3] observed that social media is a continually updated service, that gets better as many people use it. Dinesh & Nikam[4] have observed that social networks are used to promote library services to match with user's opportunities. Malhan & Shivarama[5] suggest the libraries to identify a role in the larger awareness of sharing best practices in any given area. The review of related literature finds that few libraries are using social networking tools to develop communities and personalise interactions between the library and users[6,7]. Tools such as Facebook and Twitter were used to build relationships and rapport with client groups[8,9].

Study of 20 academic libraries revealed that users appear to reject connecting with libraries on Facebook, even though other libraries are potentially using Facebook to forge good relationships with users[10]. Louden and Hall[11] found that some LIS staff find it difficult to integrate Twitter into library work. Barriers relating to privacy and IT issues were also identified in the library sector literature. A study on the use of Facebook in libraries identified issues with users who were not wishing to be friends of libraries on Facebook in their social spaces[12].

Hence the present study has been undertaken to identify the usage of social networking services in the University libraries of Karnataka.

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2. METHODOLOGY

Social networking sites have real potential use for delivering library services. In this regard, in this paper it is examined how these social networking services have been used by university libraries of Karnataka State. Karnataka has 54 universities including 1 Central university, 26 State Universities, 12 Private and 15 Deemed universities. The webpages of individual universities and libraries have been visited to assess to what extent the social networking services are used by university libraries. The data has been tabulated, for analysis.

3. DATA INTERPRETATION

3.1. Library Website

It was found that 53 of 54 universities (98.14%) do have their own websites in different domains like ac.in, .net, .org, .edu.in whereas 1 university does not have its own website. 5 State/Central universities (18.51%) were found to have separate web pages for their libraries, whereas 19 State/Central universities (70.37%) have libraries web pages as part of university websites. 2 university libraries web pages are under construction. Out of 12 Private universities 4 (33.33%) universities have separate websites for their libraries while the remaining two-third Private universities libraries (N=8) web-pages are part of the university websites. Of the 15 Deemed universities only 3 university libraries (20%) have separate web sites while 12 deemed universities (75%) have their libraries web pages as part of university websites. In all 12 of 54 universities (22.22%) have separate websites with a majority (68.51%, N-37) forming part of universities websites as show in Table 1.

Table 1. Usage of social networking services

S. No.	University name	Library website	Facebook	Youtube	Linkedin	Twitter	Any other
1.	Central University of Karnataka, Kalaburagi	Linked to University site	-	-	-	-	-
2.	Gulbarga University, Kalaburagi	Separate	Only mentioned. No further link provided	-	Only mentioned. No further link provided	Only mentioned. No further link provided	Google + -Only mentioned. No further link provided
3.	Karnataka State Women's University, Vijayapura	Linked to university site	-	-	-	-	-
4.	Bangalore University, Bengaluru	Linked to university site	Review: 3.8 star; postings, photos, videos uploaded	1 Video uploaded	-	University activities, photos, announcements, notifications	BU News -Linked to university web-page wherein library services like web-OPAC, ETD repositories, can be accessed
5.	University of Mysore, Mysuru	Linked to university site	Review: 5 star; posts, centenary celebrations photos, videos linked	-	-	Tweets, 9 following, 196 followers	-
6.	Karnatak University, Dharwad	Separate	-	-	-	-	-
7.	Kuvempu University, Shimoga	Linked to university site	-	-	-	-	-
8.	Mangalore University, Mangalore	Linked to university site	Announcements, notifications, photos, posts uploaded. Connected to university site wherein library services Web OPAC, E-Resource, campus access, remote access, facility and services are linked	Videos uploaded	-	No links founded	-

S. No.	University name	Library website	Facebook	Youtube	Linkedin	Twitter	Any other
9.	Davangere University, Davangere	Linked to university site	No further link available	-	-	No further link available	-
10.	Tumkur University,Tumkur	Linked to university site	Photos, visitors post, likes, videos uploaded. No link to library	Special lectures uploaded	67+ followers	91 tweets, 223 followers, 1 following	-
11.	Kannada University, Hampi	Library details not available	-	-	-	-	-
12.	Visvesvaraya Technological University, Belgavi	Separate	Review: 4 Star; Videos, photos, postings, linked to library e-resources can be accessed.	-	-	898 tweets, 1288 followers, 14 likes, official tweets available	Flickr – Photos uploaded Google+ - Photos uploaded
13.	National Law School of India University, Belgavi	Linked to university site	-	-	-	-	-
14.	Karnataka Veterinary, Animal, Fisheries Sciences University, Bidar	Library details not available	-	-	-	-	-
15.	Karnataka State Law University, Hubbali	Separate	-	-	-	-	-
16.	Karnataka Folklore (Janapada) University, Haveri	Library details not available	-	-	-	-	-
17.	Karnataka Samskrit University, Bengaluru	Page under construction	Review: 4.1; photos, postings, videos, events details uploaded, university website is linked	Videos Uploaded		50 tweets, 73 following, 185 followers, 12 likes Notifications, circulars, posts uploaded	Google+ - photos uploaded
18.	Rani Channamma University, Belagavi	Linked to University site	-	-	-	-	-
19.	Karnataka State Open University, Mysuru	Linked to University site	-	-	-	-	-
20.	Karnataka State Women's University, Vijayapura	Linked to university site	-	-	-	-	-
21.	Vijayanagar Sri Krishnadevaraya University, Ballari	Library details not available	-	-	-	-	-
22.	University of Agricultural Sciences, Dharwad	Linked to university site	Notifications, posts, photos, videos are uploaded. No link to library	No videos uploaded	-	Recruitment, conference tweets, photos, videos uploaded	Google + - photos uploaded
23.	University of Agricultural Sciences, Bengaluru	Linked to university site	1 photo, 1 posting uploaded	-	-	4 following, 31 followers	-
24.	Rajiv Gandhi University of Health Sciences, Bengaluru	Separate	-	-	-	-	-

S. No.	University name	Library website	Facebook	Youtube	Linkedin	Twitter	Any other
25.	University of Agricultural Sciences, Raichur	Library page under construction	-	-	-	-	-
26.	University of Horticultural Sciences, Bagalkot	Linked to university site	-	-	-	-	-
27.	University of Agricultural and Horticultural Sciences, Shivamogga	No web-page of university					
Private University							
28.	Alliance University, Bengaluru	Linked to university site	Review: 4.3 star; photos, postings, videos, events uploaded	Videos uploaded	3758 followers, details of university uploaded	282 tweets, 233 following, 2745 followers, 8 likes, 5 lists	Flickr- photos uploaded
29.	Azim Premji University, Bengaluru	No library details	Review: 4.5 Star; photos, postings, events, videos, likes uploaded; Pinterest- which provides informative pics, videos, pins, etc., Linked to University website but no details found	Videos uploaded	14471 followers; event photos and videos uploaded	614 tweets, 139 following, 1376 followers, 4 likes	-
30.	CMR University, Bengaluru	No details of library	Review: 4.1 star; photos, posts, notifications, videos uploaded	Videos uploaded	-	89 tweets,14 following, 155 followers, 17 likes; Videos, photos, posts, notifications, event pics uploaded	-
31.	PES University, Bengaluru	Separate	Postings, photos, videos uploaded; Linked to university website. Library services can be accessed through fb like- OPAC, Knimbus search	Videos uploaded	-	111 tweets, 3 following, 503 followers, 1 like, posts, photos uploaded	Google+ -postings, 119 followers; Pinterest, Instagram – 25 posts, 1640 followers, 1-following, photos uploaded
32.	Reva Institute of Technology and Management, Bengaluru	Separate	Photos, postings, notifications, linked to university and library. Services like OPAC, e-resources are accessible	Videos uploaded	Details of Reva University, 199 followers	36 tweets, 3 following, 99 followers, Photos, posts uploaded	Google+ - 52 followers, photos, postings uploaded
33.	Presidency University, Bengaluru	Linked to university website	Linked but no details provided	-	Linked but no details provided	Linked but no details provided	Goole +; Pinterest; tumblr; gmail; e-mail app - Linked but no details provided
34.	M.S. Ramaiah University of Applied Science, Bengaluru	No details of library found	Review: 4.4 Star; 73 photos, postings, videos, likes, events uploaded	Videos uploaded	-	23 tweets, 34 following, 41 followers, postings uploaded	-

S. No.	University name	Library website	Facebook	Youtube	Linkedin	Twitter	Any other
35.	Rai Technology University, Bengaluru		-	Videos Uploaded	Profile-Connections, postings uploaded	71 tweets, 7 following, 132 followers, photos uploaded	Google + - Photos uploaded
Deemed Universities							
36.	Indian Institute of Science, Bengaluru	No details of library found	-	36	Indian Institute of Science, Bengaluru	No details of library found	-
37.	Manipal University, Manipal	Separate	-	37	Manipal University, Manipal	Separate	-
38.	K.L.E. Academy of Higher Education and Research, Belgavi	Page under construction	-	38	KLE Academy of Higher Education and Research, Belgavi	Page Under construction	-
39.	Christ University, Bengaluru	Separate	Review: 4.8 star; Photos, posts, notifications, event pics, university concerned news uploaded. Connects to the University website and links to Library from where different services can be accessed like Open Access material, repository, research/ reference manager, online library, institutional membership, library user manual, library links, library catalogue	39	Christ University, Bengaluru	Separate	Review: 4.8 star; Photos, posts, notifications, event pics, university concerned news uploaded. Connects to the university website and links to library from where different services can be accessed like open access material, repository, research/ reference manager, online library, institutional membership, library user manual, library links, library catalogue
40.	J.S.S. University, Mysuru	No details of library	-	40	JSS University, Mysuru	No details of library	-
41.	NIMHANS, Bengaluru	Linked to university website	-	41	NIMHANS, Bengaluru	Linked to University website	-
42.	NITTE University, Mangalore	No details of library	Photos, posts, activities of university uploaded. University website can be connected but no details of library available	42	NITTE University, Mangalore	No details of library	Photos, posts, activities of university uploaded. University website can be connected but no details of library available
43.	Sri Siddhartha Academy of Higher Education, Tumkur	No details of library	-	43	Sri Siddhartha Academy of Higher Education, Tumkur	No details of library	-
44.	Sri Devaraj Urs Academy of Higher Education and Research, Kolar	Linked to university website	-	44	Sri Devaraj Urs Academy of Higher Education and Research, Kolar	Linked to university website	-
45.	BLDE University, Vijayapura	Separate	-	45	BLDE University, Vijayapura	Separate	-

S. No.	University name	Library website	Facebook	Youtube	Linkedin	Twitter	Any other
46.	Jawaharlal Nehru Centre for Advanced Scientific Research, Bengaluru	Separate	-	46	Jawaharlal Nehru Centre for Advanced Scientific Research, Bengaluru	Separate	-
47.	Jain University, Bengaluru	Website under construction	Review: 4.4 star; Photos, posts, latest news, events, videos uploaded. Not linked to university website	47	Jain University, Bengaluru	Website under construction	Review: 4.4 star; Photos, posts, latest news, events, videos uploaded. Not linked to university website
48.	Yenepoya University, Mangalore	Linked to university website	-	48	Yenepoya University, Mangalore	Linked to University Website	-
49.	International Institute of Information Technology, Bengaluru	No details of library	Review: 4.8 star; Posts, videos, photos, notices uploaded. Connected to university website but library details not found	49	International Institute of Information Technology, Bengaluru	No details of Library	Review: 4.8 star; Posts, videos, photos, notices uploaded. Connected to university website but library details not found
50.	Swami Vivekananda Yoga Anusandhana Samthana, Bengaluru	Linked to university website	Review: 4.6 star; photos, posts, videos, notifications uploaded. Connected to university and library. Accessible to digital repository (List), OPAC, e-resources, e-books, e-journals, newspapers.	50	Swami Vivekananda Yoga Anusandhana Samthana, Bengaluru	Linked to University Website	Review: 4.6 star; Photos, posts, videos, notifications uploaded. Connected to university and library. Accessible to digital repository (List), OPAC, e-Resources, e-books, e-journals, newspapers.
Institute of National Importance							
51.	IIM, Bengaluru	Linked to university website	Review: 4.8 star; Photos, posts, notifications, event details Uploaded. Connected to university website and library. Databases, e-resources, OPAC, e-reference services accessible	Videos Uploaded	Posts, photos uploaded	Blocked	-
52.	Indian Statistical Institute, Benglauru	Separate	-	-	-	-	-
53.	National Institute of Technology Karnataka, Suratkal	Separate	Review: 4.7 star; Photos, posts, notifications uploaded. connected to University website and library, accessible to OPAC, e-resources, magazine pages	-	-	-	-

S. No.	University name	Library website	Facebook	Youtube	Linkedin	Twitter	Any other
Extra universities							
54.	Dayanand Sagar University, Bengaluru	No details of library	Review: 4.1 star; Photos, posts, videos, notifictions, entrance test information, conference details uploaded. Not linked to University website	-	-	169 tweets, 280 following, 108 followers, 8 likes	Google + - Photos uploaded
55.	Trans-Disciplinary University, Bengaluru	Separate	-	-	-	1308 tweets, 371 following, 85 followers, 342 likes	Google + - Photos uploaded
56.	KLE Technological University, Hubbali	No details of library	Photos, posts, notifications uploaded. Linked to University website	-	-	1 tweet, 39 following, 45 followers	Google + and Flikr - Photos uploaded
57.	Srinivas University, Mangalore	No details of library	Photos, posts, notifications, university profile uploaded. Linked to University website	Videos Uploaded	Full profile available	83 tweets, 8 followers	-
58.	Institute for Social and Economic Change, Bengaluru	Separate	-	-	-	-	

3.1.1. Facebook

Facebook members can share photos, send and receive messages, chat, tag themselves or others in photos, write on friend's walls, join groups, create new groups, share new ideas in group discussions, add applications and play games[13]. From Table 1 it is found that libraries of 8 of the 27 (29.62%) State/Central universities are connected to Facebook, while libraries websites of 2 universities show connections towards Facebook but no further links are found. Out of 8 universities libraries it is found that the optimum usage of Facebook is not made, as only few notifications, photos, posts, videos regarding university functions are uploaded. Only Mangalore University, Mangalore and Visveswaraya Technological University, Belagavi have provided linkages to the library web pages through Facebook, and further through the Facebook account the user can access the library services like WebOPAC, e-resources, remote access facility, etc.

9 Private University libraries (75%) are linked to Facebook through their websites, while one University library has connection to Facebook but no further linkages are found. Out of 9 Private Universities only 2 libraries do provide library services like OPAC, Knimbus search, E-Resources, through Facebook. The remaining Private University websites (58.33%, N-7) only provide few notifications, posts, photos, events' videos, profile of universities, etc.

It is also found that a majority of Deemed Universities (66.66%, N-10) are not connected to Facebook while 5 Deemed Universities (33.33%) are connected to Facebook through university websites. Among them websites of Christ University, Bengaluru and Swami Vivekananda Yoga Anusandhana Samsthana, Bengaluru are linked to library webpages through Facebook wherein different services of libraries can be accessed like open access material, repository, research/reference manager, online library, institutional membership, library user manual, library links, library catalogue, digital library, e-books, e-journals, newspapers, etc. Whereas through other university websites we could only find uploading of posts, videos, photos, notifications, activities of universities, latest news, events and so on.

It can thus be analysed that deemed universities are lagging behind in utilising the potentialities of Facebook compared to other categories of universities. Further it can also be interpreted that though more number of private universities are connected to Facebook its optimum usage is not exploited by them and library services like reference, referral and alert services, which could be easily provided with the help of such online social networking services have not been provided.

3.1.2. YouTube

YouTube is a video-sharing website where in one can make available the content including teaching video clips,

TV clips, music videos, and also seminar presentations, education related videos and library related videos like how to search books, OPAC, e-resources, repositories, etc. It is found from Table 1 that only 5 State/Central Universities (18.51%) are connected to Youtube networking service with only 4 Universities accounting for (14.81%) uploading few general videos. Except Tumkur University, Tumkur no other university in the state has uploaded special lectures in its website. Among the Private Universities 8 (75%) are connected to Youtube while only 4 Deemed universities (26.66%) are connected to Youtube. Only few general videos are uploaded by these universities. In true sense the optimum utilisation of the Youtube social networking services is not done by any of the university whether State or Private or Deemed.

3.1.3. LinkedIn

LinkedIn is a great way to get posting and finding on jobs, sharing experience and answering questions. It's one of the best locations to connect with current and past co-workers and potentially future employers for professionals to get library patrons connected with the people that can help them find information.

It is found that among State/Central universities only Tumkur University, Tumkur is linked to LinkedIn Networking site with 67 plus followers whereas Gulbarga University website has mentioned the site but shows no further links. No other State/Central University in the state is linked to LinkedIn. Half of the Private Universities (N=6) are linked to LinkedIn Networking site wherein there are great number of followers for Alliance University, Bengaluru and Azim Premji University, Bengaluru. Reva Institute of Technology and Management, Bengaluru has 199 followers and it also provides detailed profile of the university. Rai Technology University, Bengaluru and Srinivas University, Mangalore are also connected to LinkedIn.

Only 2 Deemed Universities (13.33%) namely Jain University, Bengaluru and IIIT, Bengaluru are connected to LinkedIn. IIIT, Bengaluru has huge number of followers and it also updates recent events through LinkedIn. None of the other Deemed Universities are connected to LinkedIn Networking Site. Thus it can be interpreted that the potentialities of LinkedIn are not exploited by a majority of university libraries though few private universities are quite active in the use and adoption of LinkedIn.

3.1.4. Twitter

Twitter allows users to write short messages of up to 140 characters, called tweets that can be read by anyone with access to their pages. Users can utilise this platform to type in short messages or status update and also to keep staff and patrons updated on daily activities, like frequently updated collections.

Though 10 State/Central Universities (37.03%) are connected to Twitter only 7 are active. Majority of the universities account provide general tweets, following and followers. Among them few of the accounts also provide information on university activities, photos, announcements, notifications, few also provide certain official tweets, recruitment tweets and conference tweets also. As far as library services and library related activities are concerned, no tweets are found. All the 12 universities (100%) are connected to Twitter. There are numerous tweets, following and followers. There are photos, posts, likes, lists uploaded in the twitter account of the various university website. Among 15 Deemed universities only 6 (40%) of them have twitter accounts. Only general tweets, following and followers are found and no library related tweets could be traced. It can thus be interpreted that twitter is most popular among the Private Universities, but its utility is restricted to general university inquiry, admissions and other purposes with absolutely no use is made for library activities.

4. OTHER NETWORKING SITES

There are different social networking sites which are useful to provide different libraries services like aNobii helps to share reviews and recommendations on book and also to inform due date alerts and lending services; by creating a blog, any information can be disseminated; A Google+ user profile is a public visible account of a user that is attached to many Google properties. It includes basic social networking services like a profile photo, with directory type biographical sketch. Pinterest is a web and mobile application that operates a photo sharing website. Instagram is an online mobile photo-sharing, video-sharing, and social networking service that enables its users to take pictures and videos, and share them either publicly or privately on the app, as well as through a variety of other social networking platforms; Flickr shares new image collections and can create image sets with metadata.

It is also found from the Table 1 that 5 Sate Universities (18.51%) are connected to different networking sites. Gulbarga University, Kalaburagi; VTU, Belagavi; Karnataka Samskrit University, Bengaluru; University of Agricultural Sciences, Dharwad are connected to google plus (Google+) wherein photos are uploaded which are general in nature. VTU is also connected to Flickr which displays general photos uploaded. Bangalore University is connected to BU News through which one can access different library services like webOPAC, ETD Repositories, etc.

8 of the Private Universities (75%) are connected to different social networking sites. Google plus connectivity is found in PES University, Bengaluru; Reva Institute of Technology and Management, Bengaluru; Presidency University, Bengaluru; Rai Technology University, Bengaluru; Dayanand Sagar University, Bengaluru; Trans-Disciplinary University, Bengaluru and KLE Technological University, Hubbali wherein general photos are uploaded. PES University is also connected to Pinterest and Instagram where one can find many posts, photos, following and

followers. Presidency University is also connected to Pinterest, Tumblr, G-mail, E-mail, etc.

Only 4 Deemed Universities are connected to different networking sites. Christ University is connected to Blogspot, Flickr, and Google play. NITTE University is also connected to Blogspot where in only photos are uploaded. Jain University is connected to Google plus, and Instagram and Swami Vivekananda Yoga Anusandhana Samstana is connected to Google plus where general photos are uploaded. Again it can be analysed that these are all used for general purposes and usage of these social media for library purpose is completely neglected.

5. CONCLUSIONS

The study has revealed many facts about use of various social networking services among the University libraries. University libraries are showing inclination towards the adoption and use of such services. But the potentialities of these services need to be assessed properly against the demographic characteristics of the user community it is serving. Keeping in view the importance of social networking site and the need of user community, university libraries should develop a comprehensive Social networking service usage policy. There are differences across the libraries in using social networking services for different purposes, from marketing and promotion, to opening up the resources of the library to providing customer service to many possibilities. It can be used as complimentary tool to traditional services. Since these are quite helpful in providing alert services and also quite helpful in outreach activities, the adoption and usage of social networking services need to be geared up by the university libraries in the state.

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ANALYSIS OF INFORMATION SERVICES AND PRODUCTS IN THE UNIVERSITY LIBRARIES OF KARNATAKA STATE: TOWARDS MARKETING APPROACH

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Based on the content analysis of websites of 51 universities of Karnataka state, an attempt is made to identify the information products and services indigenously developed by university libraries. Findings reveal that only 44 university libraries have functioning websites. Further, the study also reveals that university libraries do not provide advanced information services and information products beyond alerting level. This context suggests that the university libraries have to think of developing indigenous products and services on-line with Kotler's definitions, within the purview of McCarthy's 4Ps as outlined by Saracevic with the existing staff using emerging technologies that are worth marketing.

Keywords: Marketing; Information Services; Information Products; Web-enabled Services; University Libraries; Karnataka, India

INTRODUCTION

Marketing of LI (Library and Information) services and products as a concept is more than five decades old. However, in the Indian context though much is spoken about it, its practice in the true spirit is still invisible. It is because there is a different belief about the concept among the LIS professionals. Many professionals subscribing to the thoughts of traditional LIS schools consider the concept of marketing as the one that violates the very philosophy of librarianship. Those who do not believe in traditional roots of librarianship see the concept of marketing as buying, selling process from profit point of view. But much of the Indian literature on marketing of LI services and products see it as an opportunity to prove the worthiness of libraries and stress on academic libraries to market the LI products and services based on marketing mix. Hence, an effort is made to know to what extent university libraries are providing information services and products to optimise the marketing concept.

MARKETING AS CONCEPT

Marketing as a term connotes many meanings. The term is understood differently by different professionals. Though there is no uniformity in its definition, many professional organizations and individuals have defined the term from their perspective. Marketing is defined as "the analysis, planning, implementation and control of carefully formulated programme designed to bring about voluntary exchange of values, with target markets for the purpose of achieving organizational objectives" (Kotler, 2000). Bushing (1998) defined marketing as the management process that is responsible for the identification, anticipation, and satisfaction of customers' requirements profitably. Rowley (2001) views marketing as "a management process by which customer or user requirements are identified, anticipated and supplied efficiently and profitably". All definitions make it crystal clear that marketing aims at customer satisfaction and requires the entrepreneurs to consider marketing approach to sell their products and services. Core of marketing is considered to be the marketing mix proposed by Borden but converted by McCarthy into 4 P's viz., Product, Price, Place, and Promotion. Of all the Ps, the first P – the Product is the most essential component without which marketing as a process cannot start.

In this context, the 'Product' gets importance. In the context of libraries be it public or academic or special, products are information products including information services. Information product is any portion of information/ knowledge that has been recorded in some systematic way. It means information product is an item that has been derived from more than one source to achieve a specific purpose. According to Saracevic (1986) Information product is the end result of the process of evaluation and compression of relevant documents in order to provide definite user groups with reliable and concise information in usable form. Information product is a source where data and information are structured in a specific format to educate, instruct and guide the consumers in order to meet a predetermined purpose. In the context of academic libraries information products may be educational materials, instructional guides, reviews, reports, databases, technical writings, handbooks, critical studies and requests for specific services. Unless these products are indigenously developed by academic libraries (entrepreneurs) one cannot expect the marketing of information products and services.

REVIEW OF LITERATURE

Reported literature was searched in LISTA, emeraldinsight.com, JSTOR GATE and Google Scholar. Many studies are reported from practicing librarians, researchers and LIS teachers from different parts of the world. Much of the literature is quite theoretical only bringing in many issues of marketing in libraries and information centers. A number of studies were based on either Kotler's theories or McCarthy's 4Ps and their applications in libraries. Few studies highlight on the problems and prospects of marketing information products in libraries. Very few studies have been conducted based on field surveys.

Suresh Kumar (2013) studied the application of marketing mix variables, degree of marketing orientation and users' attitude towards marketing

applications of the university libraries in Kerala by conducting a survey of universities in Kerala. The results indicate that university libraries in Kerala have moderate degree of marketing orientation. In another study Suresh Kumar (2013a) based on a survey of 842 users of university libraries in Kerala, found that a majority of users were willing to pay for quality information services rather than free services. The study also found that very few users were aware of existing information services. Sookhtanlo and others (2014) surveyed 90 staff employed in central libraries in the selected Faculties of Agriculture in Iran. The results indicate that majority of them (72.3%) have positive and very positive attitude to applying information marketing factors. Sarita Rani and Kaur (2005) examined the attitude of the professional staff at Guru Nanak Dev University Library Amritsar towards different aspects of marketing. The results reveal that the attitude of library staff towards marketing of LI products and services is positive.

Kanujia (2004) studied marketing of information products/services in LICs of R&D institutions of Council of Scientific & Industrial Research in India. The findings reveal that librarians have a positive attitude towards different aspects of marketing of a library's information products/services. Enweani's (2018) study of identifying the strategies used in marketing library and information services in Chukwuemeka Odumegwu Okukwu University Teaching Hospital, Amaku, Awaka, Nigeria reveal that strategies used were ineffective compared to the then contemporary changing environment and suggests to use online marketing technique. Anil Kumar's (2014) study of users at Kurukshetra University library found that users are ready to pay for the services and products but a majority of them were not aware and hence haven't used the services and products.

The review reveals that many articles have been published on topics like "pricing, strategies adopted and LIS professionals or user's willingness to accept the marketing concept". But a major component 'Product' hasn't received the attention from the researchers. Hence the big question 'whether the libraries have the required information products and services to market them' necessitates undertaking the present study.

OBJECTIVE OF THE STUDY

The primary objective of the study is to identify the availability of different types of information services and information products indigenously developed by the Universities in Karnataka State which can be of worth marketing.

METHODOLOGY

Websites of 51 universities (Appendix 1) which were established before 31.12.2015 were visited between 01.01.2019 and 31.10.2019. Basic information about universities was noted from the websites. Further, Library and Information Services including Web enabled services provided by the university libraries and Information Products indigenously developed by the university libraries were also noted down in a worksheet specially designed for the purpose. And the data was analyzed.

RESULTS

General Information

The table 1 depicts the nature of universities in Karnataka. The data shows that there is one

Central University (1.96%, N=1), twenty five (49.02%) state universities, fourteen (27.45%) deemed universities and eleven (21.57%) private universities as on 31.12.2015.

Table 1: Nature of Universities

Nature	Number of respondents	Percentage (%)
Central	1	1.96
State	25	49.02
Private	11	21.57
Deemed	14	27.45
Total	**51**	**100.00**

Accreditation of Universities

The accreditation details of the universities are provided in table 2. It is found that 21 (41.18%) universities were not at all accredited. More than half of the universities (N=26, 50.98%) were accredited to NAAC and three (5.88%) universities were accredited by ICAR and only one (1.96%) university was accredited by IACBE (International Accreditation Council for Business Education).

Table 2: Accreditation of Universities

Accreditation	No. of respondents	Percentage (%)
No	21	41.18
NAAC	26	50.98
ICAR	3	5.88
IACBE	1	1.96
Total	**51**	**100.00**

Library Websites

It is found from the table 3 that all the universities have their websites. Nearly three fourth of the universities have (N=36, 70.59%) library website as part of the university website, only 15.69% (N=8) of the libraries have independent websites, in 5 (9.80%) universities there are no details regarding their library and one each university library menu does not open and the library needs to develop their link. Hence, only 44 university libraries were considered for further processing of data on information products and services.

Table 3: Nature of university library websites

Nature of websites	No. of respondents	Percentage (%)
Independent	8	15.69
Part of University	36	70.59
Library menu does not open	1	1.96
Need to develop link	1	1.96
No details	5	9.80
Total	**51**	**100.00**

Information Services and Products

The table 4 provides the details of different library and information services provided by the university libraries mentioned in their websites. It can be seen that all the universities provide reprographic service (N=44, 100%) in their libraries. 81.82% (N=36) of them provide reference service, 56.82% (N=25) provide inter library loan, 47.73% (N=21) provide newspaper clipping service. It can also be observed that nearly 45.45% (N=20) university libraries provide document delivery service which is very much required by the university library users. 40.91% (N=18) university libraries provide current awareness service, very less number of universities i.e., 27.27% (N=12) provide referral service, 25% (N=11) provide literature search service and question paper bank service is provided by six (13.64%) university libraries. Only four (9.10%) university libraries provide selective dissemination of information service and the services like technical enquiry service,

translation service and outreach service are provided by one (2.22%) library each. The services like abstracting, data service and bibliometric services are not provided by any of the university libraries of Karnataka. This means the university libraries are not providing majority of the library services which are helpful to the user community to search information.

Table 4: Library and Information Services provided by the university libraries

LI services	No. of respondents	Percentage (%)
Reference service	36	81.82
Referral service	12	27.27
Literature Search Service	11	25.00
CAS	18	40.91
SDI	04	9.10
Newspaper Clipping Service	21	47.73
Abstracting Service	00	00
Data Service	00	00
Technical Enquiry Service	01	2.27
Translation Service	01	2.27
Reprographic Service	44	100.00
Inter Library Loan Service	25	56.82
Document Delivery Service	20	45.45
Bibliometric Service	00	00
Outreach service	01	2.27
Question Paper Bank	06	13.64

Web enabled services provided by the University libraries

The table 5 provides the details of the university libraries providing web enabled services through their library websites. It can be found that more than three fourth (N=34) university libraries are providing web based user education in their libraries and 43.18% (N=19) of the university libraries provide access to online databases. 29.55% (N=13) provide subject gateways, 13.64% (N=6) provide virtual library services, 9.1% (N=4) provide ask-a-librarian service, 6.82% (N=3) provide FAQ. It is also found that none of the university libraries are providing bulletin board service. It can also be observed that many of the innovative web-enabled services are yet to be introduced by the University libraries.

Table 5: Web enabled services provided by the University libraries

Web-enabled services	No. of respondents (N=44)	Percentage (%)
Virtual Library Service	06	13.64
Ask- A – Librarian	04	9.10
Bulletin Boards	00	00
Web based user education	34	77.27
Web forms	00	00
Access to online databases	19	43.18
FAQ	03	6.82
Subject Gateways	13	29.55

Information Products indigenously developed by the university libraries

The table 6 lists the information products indigenously developed by the university libraries. It is found that majority of the university libraries (N=37, 84.10%) provide link to e-journals, 81.82% (N=36) provide link to e-books, two third (N=31, 70.45%) of the university libraries provide web OPAC and 68.18% (N=30) provide link to e-courseware. More than half of the university libraries (N=25, 56.82%) provide catalogue of theses and dissertations and ETD, 40.91% (N=18) provide institutional repositories of the universities, 22.73% (N=10) provide accession list/ list of new additions, 13.64% (N=6) provide e-newsletter, around 9.1% (N=4) of them provide in-house journals, 6.82% (N=3) of the university libraries provide Bibliographies,

Table 6: Information Products indigenously developed by the university libraries

Information products	No. of respondents (N=44)	Percentage (%)
Library brochure	02	4.55
Accession lists/ List of additions	10	22.73
Web OPAC	31	70.45
Catalogue of theses and dissertations	25	56.82
ETD	25	56.82
Link to e-books	36	81.82
Link to e-journals	37	84.10
Link to e-course wares	30	68.18
Current Awareness Bulletins	06	13.64
Bibliographies	03	6.82
Datasheets	00	00
Handbooks/Manuals	00	00
Expert Databases	00	00
State of the art reports	00	00
Trend reports	00	00
Technical digests	00	00
Translation pools	00	00
In-house journals	04	9.1
E-Newsletters	06	13.64
Institutional Repositories of the University	18	40.91
Reviews	01	2.27
Trade literature Bulletins	00	00
Infographics	00	00

4.55% (N=2) of them provide their library brochure, and only university library provides review service. Many other web enabled services like providing datasheets, handbook/manuals, expert database, state of the art reports, trend reports, technical digests, translation pools and trade literature bulletins are not provided by any of the university libraries. It can be interpreted that the status of providing indigenously developed information products is not really encouraging as many of them are yet to provide such products and services.

CONCLUSION

The results reveal that the university libraries have not been putting considerable efforts in the design and development of information products and services based on the principle of marketing which are worth of marketing. The services and products which one can find now in university libraries are mandatory ones. A majority of them are alerting types of products and services. In view of the contemporary changes worldwide, the very face of library has changed. In this context the university libraries have to think of developing indigenous products and services on line with Kotler's definitions, within the purview of McCarthy's 4Ps as outlined by Saracevic.

McCarthy's 4 Ps have put a clear responsibility on the LIS professionals. They have to carefully balance these 4Ps in their marketing mix to make sure that they have a visible, in-

demand product or service that is competitively priced and promoted to suit the demands of the user community which they are serving. The third P of McCarthy, in the context of Saracevic's definition, means product emanating from the process of information analysis and consolidation involving different activities to satisfy the information needs of user groups. Hence, LIS professionals have to explore, create and deliver value to satisfy the needs of target group i.e. the user community of the library.

Of course the present day university libraries have their own inherited problems like lack of minimum required staff to maintain routine operations and financial cuts. In spite of this challenging situation, university libraries must realize the benefits of marketing. It can create competitive advantages. Development of new services and products will increase user base, improves status and image of the organization, and helps in getting better scores in accreditation process. Indeed it is time for the university libraries to initiate the development of products based on market analysis suitable for different user groups. Though a separate unit is required with required staff as proposed by Saracevic and Seetharama, one can start with the existing staff using emerging technology.

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APPENDIX -1

List of Universities/ institutions of higher learning whose websites were visited

1. Central University of Karnataka, Kalaburagi **(www.cuk.acin**)
2. Bangalore University, Bengaluru (**www.bangaloreuniversity.ac.in**)
3. Davangere University Davangere **(www.davangereuniversity.ac.in**)
4. Gulbarga University, Kalaburagi **(www.gug.ac.in**)
5. Kannada University, Hampi **(www.kannadauniversity.org**)
6. Karnatak University, Dharwad **(www.kud.ac.in**)
7. Karnataka Flokore University, Shiggaon **(www.janapadauniversity.ac.in**)
8. Karnataka State Law University, Hubballi **(www.kslu.ac.in**)
9. Karnataka State Dr. Gangubhai Hangal Music and Performing Arts, Mysuru **(www.musicuniversity.ac.in**)
10. Karnataka State Open University, Mysuru **(www.ksoumysuru.ac.in**)
11. Karnataka State Women's University, Vijayapura **(www.kswu.ac.in**)
12. Karnataka Veterinary, Animal and Fisheries Science University, Bidar **(www.kvafsu.edu.in**)
13. Kuvempu University, Shivamogga **(www.kuvempu.ac.in**)
14. Mangalore University, Mangalagangothri **(www.mangaloreuniversity.ac.in**)
15. National Law School of India University, Bengaluru **(www.nls.ac.in**)
16. Rajiv Gandhi University of Health Sciences, Bengaluru **(www.rguhs.ac.in**)
17. Rani Channamma University, Belagaum **(www.rcub.ac.in**)
18. Tumkur University, Tumkuru **(www.tumkuruniversity.ac.in**)
19. University of Agricultural Sciences, Bangalore **(www.uasbangalore.edu.in**)
20. University of Agricultural Sciences, Dharwad (**www.uasd.edu**)
21. University of Agricultural Sciences, Raichur (**www.uasraichur.edu.in**)
22. University of Horticultural Sciences, Bagalkot (**www.uhsbagalkot.edu.in**)
23. University of Agricultural and Horticultural Sciences, Shivamogga (**www.uahs.edu.in**)
24. University of Mysore, Mysore **(www.uni-mysore.ac.in**)

25. Vijayanagara Sri Krishnadevaraya University, Ballari **(www.vskub.ac.in)**
26. Visvesvaraya Technological University, Belagavi **(www.vtu.ac.in)**
27. BLDE University, Vijayapura (**www.bldedu.ac.in**)
28. PES University, Bengaluru (**www.pes.edu**)
29. Christ University, Bengaluru (**www.christuniversity.in**)
30. Indian Institute of Science, Bengaluru (**www.library.iisc.ac.in**)
31. International Institute of Information Technology, Bengaluru (**www.iiitb.ac.in**)
32. JSS Academy of Higher Education and Research, Mysuru (**www.jssuni.edu.in**)
33. Jain University, Bengaluru (**www.jainuniversity.ac.in**)
34. Jawaharlal Nehru Centre for Advanced Scientific Research, Bengaluru (**www.jncasr.ac.in**)
35. KLE Academy of Higher Education and Research, Belgavi (**www.kledeemeduniversity.edu.in**)
36. Manipal Academy of Higher Education, Manipal (**www.manipal.edu**)
37. NITTE University, Mangalore (**www.nmamit.nitte.edu.in**)
38. Sri Devraj Urs Academy of Higher Education and Research, Kolar (**www.sduu.ac.in**)
39. Sri Siddhartha Academy of Higher Education, Tumakur (**www.sahe.in**)
40. Swami Vivekananda Yoga Anusandhana Samsthana, Bengaluru (**www.svyas.edu.in**)
41. Yenepoya University, Mangaluru (**www.yenepoya.edu.in**)
42. Alliance University, Bengaluru (**www.alliance.edu.in**)
43. Azim Premji University, Bengaluru (www.azimpremjiuniversity.edu.in)
44. CMR University, Bengaluru (**www.cmr.edu.in**)
45. Dayanand Sagar University, Bengaluru (**www.dsu.edu.in**)
46. Garden City University, Bengaluru (**www.gardencity.university**)
47. M S Ramaiah University of Applied Sciences, Bengaluru (**www.msruas.ac.in**)
48. Presidency University, Bengaluru (**www.presidencyuniversity.in**)
49. Rai Technology University, Bengaluru (**www.raitechuniversity.in**)
50. REVA University, Bengaluru (**www.reva.edu.in**)
51. KLE Technological University, Hubballi (**www.kletech.ac.in**)

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